Black   White   Gray
The building blocks of photographic images

Photographic paper is coated with a thin emulsion containing a form of silver that is sensitive to light.   If it is exposed to light it will get darker. If this paper is protected from light, it will not change color.
If it is exposed to light and treated with a developing solution, the paper will go solid black.

This paper is sensitized in a way that protects it from amber colored light so it can be handled for short periods under "safelight" conditions.

If the paper is exposed to small amounts of light for brief periods of time, different shades of gray can be produced. This is the basis of photographic printing. Negatives made in a camera are used to make "continuous toned photographs" usually consisting of Black, White and various shades of Gray.

This exercise has you use an enlarger without a negative as a light source to experiment with gray scales and create multi-toned designs on photo paper.
This technique is called a "Photogram", or cameraless image.

Goal:
Familiarize yourself with the enlarger and timer.
Learn to expose in increments to make a test strip.
Process the paper in photo chemistry.

Equipment:
1) Darkroom with amber safelights.
2) Light Source - enlarger with lens
3) Cardboard
4) Sink with trays for developing paper
5) Running water for washing prints

Supplies:
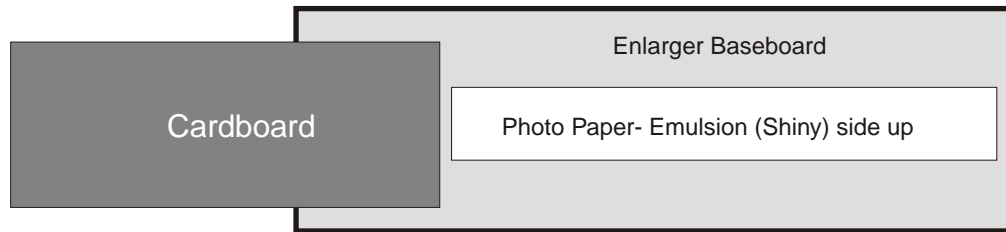1) Photographic paper
2) Chemistry (developer, Stop, Fix)

Test strip - the fundamental way to determine proper exposure.

Components of photographic exposure~
1) The amount of light
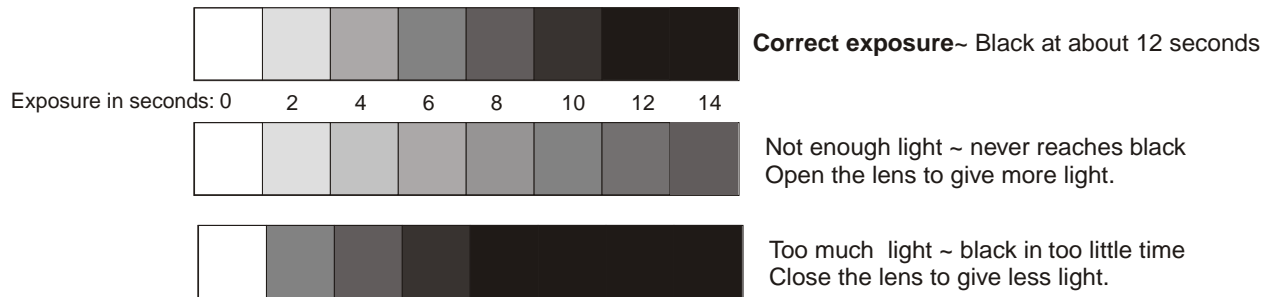2) The length of time the paper is exposed to the light

For this exercise-
Raise the enlarger about 24 inches, set the timer to two seconds and the lens to f8 or in the middle of its range.

Enlarger Baseboard

Cardboard

Photo Paper- Emulsion (Shiny) side up

Cover about one inch of the paper with the cardboard and make the first 2 second exposure.
Move the cardboard to cover another half inch of the paper and expose for another 2 seconds.
Continue making a series of exposures along the paper until it is all covered up (about 7 or more 2 second "hits")

Process the paper completely and examine in room light. Look for the point where the paper is completely black.

Exposure in seconds: 0   2   4   6   8   10   12   14

Correct exposure~ Black at about 12 seconds

Not enough light ~ never reaches black
Open the lens to give more light.

Too much light ~ black in too little time
Close the lens to give less light.

The goal is to balance the amount of light to make the paper go black in 10 or 12 seconds, 5 or 6 "hits" with the timer.

With these settings, you are now ready to make photograms that can contain a full range of tones from Black to white.

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Photograms

In the photographic process we convert the positive subject to a negative image and then back to a positive print
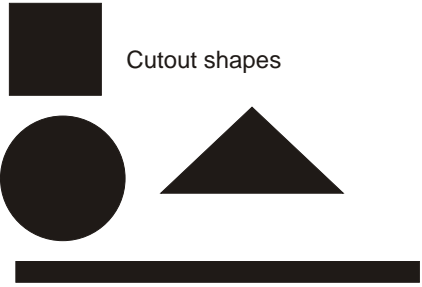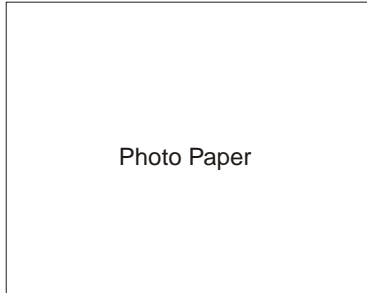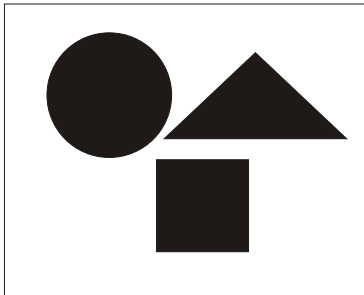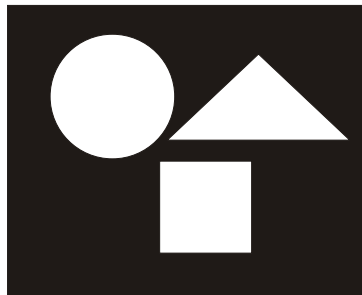
negative

positive print

A photogram is an image made on photographic paper without using a negative. Early photographs were photograms because cameras and lenses were not perfected yet.

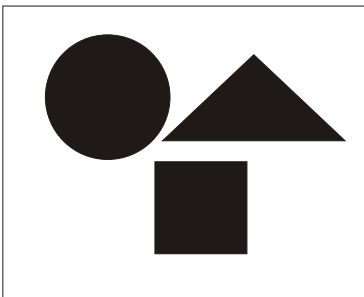Photo Paper

Cutout shapes

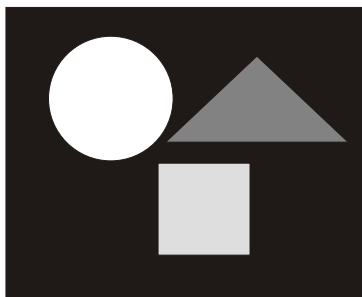Early Photogram by Fox Talbot

Arrangement under enlarger

Final print

If objects are placed on the paper and exposed for the time determined for maximum black, the image is only black and white.
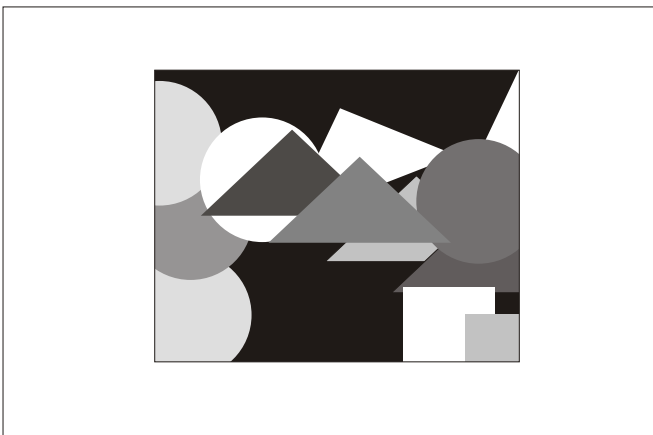
Arrangement under enlarger

Final print

By changing the amount of exposure you can create different shades of gray in the image. If the circle didn't move for the whole exposure- its image is white. The triangle and square were removed after differing number of exposure hits.

The whole image was given 12 hits making the background black.

Overlapping shapes and varying exposure times can create different designs. The goal is to create a design within the rectangle using the three shapes. Exposures should be controlled to include the full range of tones- Solid black, pure white, and at least three shades of gray.

Remember: to have pure white- no exposure light can hit the paper. To have solid black- the light has to hit the paper for the total number of hits to make black as determined by your test strip.

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