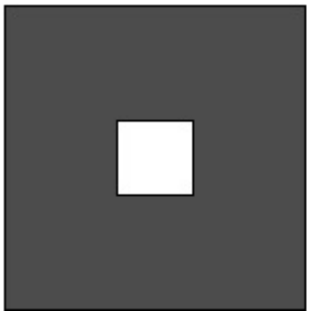
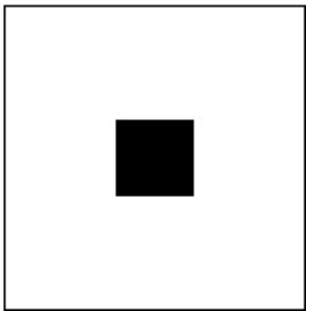
BELLOWS EXTENSION CORRECTION CALCULATOR

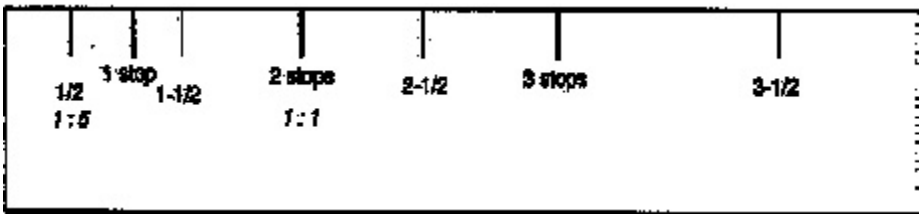
Recall that effective aperture is a product of the focal length, size of the lens opening and its distance from the focal plane. If focal length and diameter of the opening remain constant, but the distance from the film plane increases, a smaller quantity of light reaches the film plane. Therefore it is necessary to make adjustments in exposure when the lens is focused on objects closer to it, thus moving the lens away from the film plane.

If we are to photograph an object at its' actual size, the distance from the object to the lens must equal the distance from the lens to the film plane. Since the lens is now 2X the focal length from the film, the exposure must be multiplied by 4 (the square of 2).

Here is a calculator to assist you in making your calculations.







Directions for use:

1. Cut out the chips and glue back to back.
2. Cut out rule and mount or glue to a piece of 2 ply mount board.
3. When photographing anything less than 8X focal length from the lens-
    a. Place the chip which is easiest to see against the background approximately 1/3 way into the part of the scene you are photographing.
    b. Focus the camera and use all necessary movements.
    c. Use the rule to measure the image on the ground glass.
    d. Adjust your exposure accordingly.

Order of calculating exposure:

1. Calculate base exposure
2. Apply bellows extension factor
3. Apply reciprocity correction