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## Equivalent Exposures

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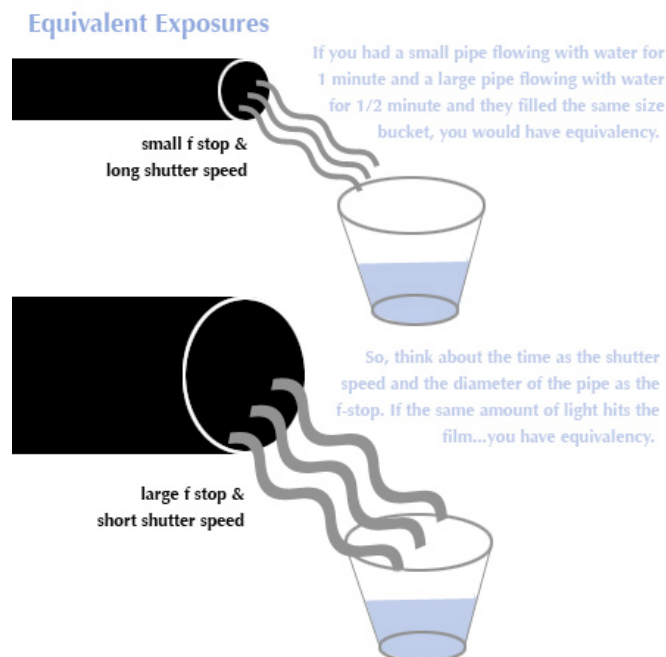
There are multiple "correct" exposures for each scene photographed. An equivalent exposure is one in which the F-stop/shutter speed combination is changed in order to achieve particular creative ends. Such equivalent exposures can only be calculated after an initial exposure has been established.

You may think that my camera takes care of all that...and you would be right. But being able to calculate equivalent exposure is important to truly understanding exposure. It is also necessary to use equivalent exposures in night photography and advanced flash techniques.

Maintaining equivalence mean that there is no change in exposure, precisely the same amount of light reaches the film. Adjustments may be made in shutter speed or aperture so long as opposite adjustments are also made. If the opposite adjustment is not made, then the exposure is not an equivalent exposure.

Remember that the difference between each true f-stop and shutter speed to the one adjacent to it is one stop. If I give one stop more light in the f-stop, I must give one stop less light in the shutter speed to maintain equivalency.

Think about equivalent exposure this way:



If you had a small pipe flowing with water for 1 minute and a large pipe flowing with water for 1/2 minute and they filled the same size bucket, you would have equivalency.

So, think about the time as the shutter speed and the diameter of the pipe as the f-stop. If the same amount of light hits the film...you have equivalency.

Where does ISO come in? Well, in our analogy, the ISO would be the size of the bucket. How quickly does it become "full."

Conveniently, ISOs have the same relationship to each other as F-stops and Shutter Speeds. There is one stop between ISO 100 and ISO 200 just like there is one stop between f5.6 and f4 or 1/125 of a second and 1/60 of a second.

## Photo 5

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Try the following equivalent exposure challenges!

1. Example: Correct exposure for scene X with 100 ISO film =  $1/125 @ F8$ . Equivalent exposures to  $1/125 @ F8$  would be:

$1/60 @$  \_\_\_\_\_  $@ F2.8$

$1/$ \_\_\_\_  $@ F16$        $1/15@F$ \_\_\_\_

2. Your camera is loaded with 400 ISO film. You have one roll of 3200 ISO film in your pocket. Your camera has shutter speeds from 1 sec. to  $1/1000$  of a sec. Your lens has f-stops from F1.4 to F16. The correct exposure for the scene you are photographing is  $1/125$ th of a second at F2.8. You are using a 50 mm lens.

a. What will the equivalent exposure be at F8? \_\_\_\_\_

b. What f-stop would you use at  $1/500$  of a second shutter speed to maintain equivalence?  
\_\_\_\_\_

c. What is the slowest shutter speed you can use and why?

You decide to use your 3200 ISO film. For the maximum depth of field on a handheld shot, what would be your f-stop/shutter speed combination?

d. F-stop \_\_\_\_\_

e. Shutter speed \_\_\_\_\_

3. You have a lens with f-stops from 1.4 to 22. The correct exposure for the subject is  $F5.6 @ 1/125$  of a second. Your camera has shutter speeds from 1 second to  $1/1000$  of a second.

a. Given the above, what f-stop would you use for maximum depth of field? \_\_\_\_\_

b. What would the necessary shutter speed be at this f-stop in order to maintain an equivalent exposure?  
\_\_\_\_\_

c. What shutter speed would you use if the subject was moving and you wanted to "stop action"? \_\_\_\_\_

d. What would be the proper f-stop at this new shutter speed? \_\_\_\_\_

4. You are using ISO 100 film at a concert and your proper exposure reading is F2 at  $1/15$  of a second. You do not have a tripod, but you have a roll of 400 ISO film with you. You are using a 135 mm lens.

a. What will be the proper shutter speed at F2 using the 400 ISO film? \_\_\_\_\_

b. Will you be able to make a sharp hand-holdable shot with the 400 ISO film? \_\_\_\_\_

c. Describe below what your options are in this photographic situation.

Knowing how the exposure is determined in your camera is an essential aspect to creative imagemaking. The best photographers use all the automatic functions at their disposal and their experience and knowledge to deviate from them when necessary.