

Reciprocity

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A perfect exposure: Reciprocity, states that if you increase the aperture setting in a perfect exposure, you will need to adjust the equivalent in the shutter speed in the opposite direction to keep the perfect balance to enable the same amount of light to strike the CCD or film.

To say it a different way, if you change the aperture from f4 to f5.6 and the original speed of the shutter was $1/250^{\text{th}}$ of a second, the light coming through the lens has been reduced by the smaller aperture, so the speed of the shutter has to be made slower, $1/125^{\text{th}}$ of a second to balance the sums.

However because of the differing subjects shot and creative effects wanted by the photographer. Some settings will not work lowering the aperture to get more depth of field, will cause the shutter to be unsuitable for action. If you are a photographer taking, sports for instance, you may not be able to get the effects you want, with a slower speed of shutter (though this could be the effect you are looking for, i.e. blurring/showing speed) or the lens will not close down or open up enough. This is where the third variable comes into play, the ISO setting of the CCD, its ability to capture the light to make up the image.

So we now have a 3 way balancing act to work with to get the image we want. To get correct exposure and the effect we want, we either have to start with the aperture, to control the depth of field that we want or the speed to the shutter to enable us to show or freeze the action. It then is a matter of getting the other two correct to get us the image we want.

I realise that the camera is somewhat capable of setting these in their correct balance, but it may set the camera in such a way so that there is no artistic input. It may set the camera to shutter speed so that you aren't effected by camera shake, $1/60^{\text{th}}$ perhaps, the other settings being set to balance the exposure, but in some circumstances the aperture setting will be wrong, you may not have the depth of field that you want or be able to show speed in the object because the shutter speed is set too high.

Take it (the camera) of auto and have a play...!!!