

# Exposure

To create a photograph a camera needs a measured amount of light called the **exposure**. (Sometimes referred to as an **EV - exposure value**)



Too much light and the picture is **over exposed** (too light/white); too little and it is **under exposed** (too dark/black).

Your camera has a very sophisticated metering system that is good at controlling the amount of light that hits the sensor but it is not infallible. If the subject is predominantly dark the camera may let in too much light, over exposing the picture. If it is predominantly light it will under expose the picture making it too dark. To correct this we need to apply **exposure compensation**.

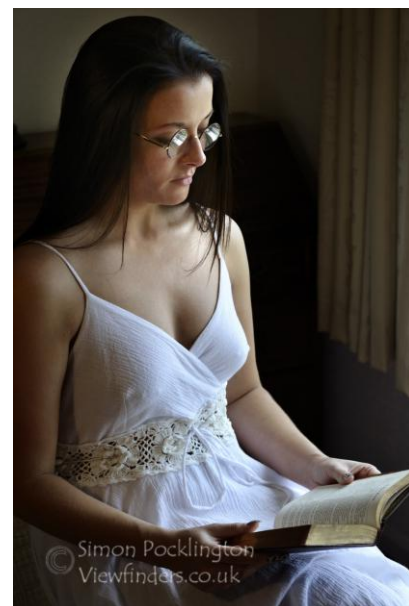
## Exposure Compensation

Generally a correctly exposed photograph has a little bit of detail in the whitest highlights. In the picture above the detail in the white side of the boat is just visible in the centre picture but is 'washed out' in the over exposed version. Don't worry if your picture is a little too dark as we can always rescue an under exposed picture in editing software but cannot restore the lost detail of an over exposed one.



If the subject is predominantly light the camera will under expose the picture making it too dark.

The picture on the far left is the camera's interpretation and the lighter one has exposure compensation of +1



If a light subject is placed against a predominantly dark background the camera will try to lighten the background and over expose the light subject's highlights. We need to reduce the exposure by adjusting the exposure compensation to a minus value. In this case -1

## Dynamic Range.

Our eye contains a wonderful light meter. When we look out of the window on a bright, sunny, day it closes down to compensate for the intensity of the light. When we look back into the darker room it compensates by opening up to let more light in; but, even our eyes, cannot record both scenes at once.

If we attempt to photograph a scene that contains bright highlights and dark shadows our camera is also incapable of recording both. The exposure required for the highlight may be six or eight EV steps less than the shadow. Most cameras are only able to record different exposures at one time of 3, 4 or 5 steps. This is called the dynamic range. If we allow the camera to determine the exposure it will pick the average in the middle which may mean the highlights burn out to white or the shadows just record as a solid black. We can use exposure compensation to shift the exposure towards the shadow or the highlights and record the detail we want.

Modern image editing technology has also given us the ability to blend more than one photograph together so that we can use separate images, one exposed for the highlights, one for the mid tones and one for the shadows. This is called High Dynamic Range (HDR) photography. To ensure the photographs blend seamlessly together they usually need to be taken using a tripod.

There are also limits to the system. Most cameras can cope with all but the brightest lights such as pointing it at the midday sun. Not recommended anyway as you might burn out the sensor and your eyeballs. At the other end of the scale there comes a point in low light where our human eyes can cope but the camera just cannot let enough light in to create a viable picture.

## Sensitivity ISO

The sensitivity of a digital sensor can be increased to help cope with low light levels: the sensor amplifies the light falling on it and needs less light to create the pictures.

The trade off is that as the sensitivity increases the quality decreases. The picture becomes noisy, digital artifacts start to show up at lower levels of enlargement, and the colours become weaker.

Films are also made with different sensitivity ratings and for convenience sensor sensitivity uses the same ISO scale. The normal rating for your camera will probably be 200 ISO. This will give the highest quality. At ISO 400 you probably will not notice much difference. At ISO 800, 1600, or 3200 the quality will start to decrease. How much depends on the type and quality of your camera. Some modern (high end) cameras can still produce acceptable results at ISO 6400 or 12800.

