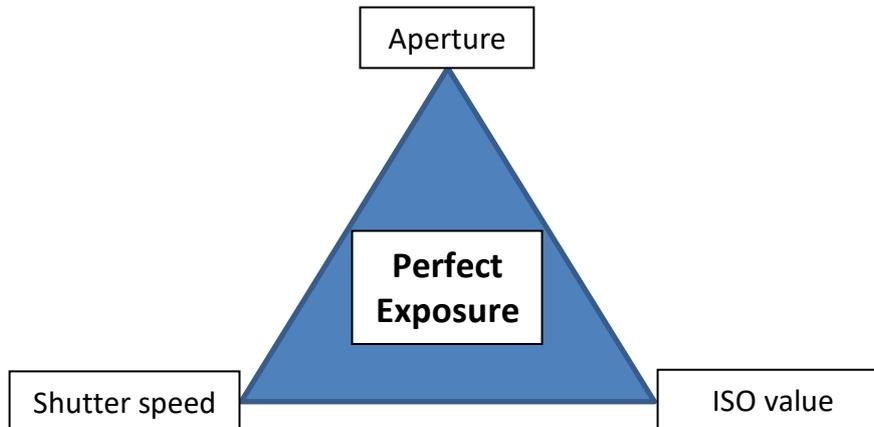


Pagham Photographers

EXPOSURE

The Exposure Triangle

Aperture (A or Av), Shutter speed (T or Tv) and ISO are the three elements that interact together to result in a perfect exposure. It is easiest to think of them as a triangle, in which, if one is changed, one or both of the other elements must be changed to maintain the balance between them.



Each element of the exposure triangle has a slightly different way of using the available light and therefore the quality of the exposure that results:

- **Aperture** is the size of the lens opening. It controls the amount of light that enters the lens. The larger the opening, the more light; the smaller the opening, the less light.
- **Shutter speed** controls how long the shutter is open. That means it controls the duration that light is allowed to hit the camera's sensor. The longer the shutter speed, the more light that results. The shorter the shutter speed, the less light that hits the sensor.
- **ISO** controls the sensitivity of the camera's sensor. The lower the ISO, the less sensitive the sensor is to light. The higher the ISO, the more sensitive it is.

It's important to note that these three elements work together to generate an **exposure value (EV)**. This means that you cannot manipulate one setting without it having a direct impact on one or both of the other elements of the exposure triangle. For example, to simplify, if a value of 10 is assigned to each factor, the triangle total will be 30. If one is changed to 8, the others must be adjusted to take account of this. It could be by changing only one of the other factors to 12 or by changing both to 11. See below for how this impacts taking photos.

Pagham Photographers

Basic Daylight Exposure (BDE) or the Sunny 16 Rule

Basic Daylight Exposure (BDE) assumes that if you have set your camera to Manual on a bright sunny day and have selected an aperture value of f16 and an ISO of 200, the shutter speed will need to be the reciprocal (in seconds) of the ISO number, ie; 1/200 sec, to give a perfectly exposed image with everything in focus.

If, however, let's say that you want the subject to stand out and everything else be thrown out of focus, you would most likely adjust your aperture to f4 to give this but if you keep the ISO at 200 and the shutter speed at 1/200sec the resulting picture will be over exposed as you have now let in far too much light because you have increased your aperture. To get back to the perfectly exposed image, you need to make an **Equivalent Exposure** calculation.

** **Equivalent exposure** is a term used in photography to describe changing aperture, shutter speed and ISO by corresponding amounts while keeping the lighting the same for proper exposure. A change to a wider aperture will require a higher shutter speed (and vice versa) assuming ISO does not change.*

Let's look at the apertures, the changing sizes are separated into steps known as f stops, lenses can have a range as shown in the figure (actual values will depend on the lens being used);

(Widest) 1.4 | 2 | 2.8 | **4 | 5.6 | 8 | 11 | 16** | 22 | 32 (Narrowest)



! NB: some cameras give you 1/3 or 1/2 stops between the major points, eg; 5.6 | 6.3 | 7.1 | 8 or 5.6 | 6.7 | 8. Ignore these for now.

Those highlighted in green indicate the adjustment made to the aperture when it was changed from f16 to f4 and this shows it moved it four stops. Based on the principles of the Exposure Triangle, it follows you must move something else, ie; shutter speed and/or ISO value, an equivalent amount of stops to compensate for this change to maintain the correct amount of light falling on the camera's sensor. There are a number of options to achieve this, the easiest would be to move the shutter speed up four stops and by doing this, you would have an **Equivalent Exposure**. An alternative would be to move the shutter speed up two stops and the ISO up two stops

I hope that this makes sense and makes the Exposure Triangle of Aperture Value, ISO and Shutter Speed a little clearer.

THINK SETTINGS