# ISO, Aperture and Shutter Speed – What to Use and When


There is often confusion when moving away from the fully automatic mode on a camera to a semi-automatic setting, such as Aperture Priority.

## Aperture Priority

This is the setting that most photographers use. Aperture priority, often abbreviated A or Av (for aperture value) on a camera mode dial, is a setting on some cameras that allows the user to set a specific aperture value (f-number) while the camera selects a shutter speed to match it that will result in proper exposure based on the lighting conditions as measured by the camera's light meter.

When setting out to take images, there are a number of factors to consider. If you aren't using "AUTO", these are the things to think of before fully pressing the shutter!

1. **ISO**

   This is the setting that defines the sensitivity of the sensor in your camera. Measured in values of 100 – 25,600 (and above) the sensitivity increases with the value. Settings of 100 – 200 can be used on a bright sunny day, or in a very well-lit situation. Higher values, such as 400-800 would be the starting point for indoor shots (without flash), while 800 and above should be used where light levels are low, such as churches or cathedrals on days when the weather is not bright.

   So, why not just set the ISO value to a high setting and just 'click away'? The higher the value, the more noise or grain appears in the image. While in some instances this could be used for artistic purposes, in general it is an unwanted artifact.

2. **Shutter Speed**

   Unless you need to include movement in a picture (for example a waterfall) the shutter speed needs to be high enough to avoid camera shake. In general, a speed of 1/60$^{th}$ of a second will eliminate shake, but the higher the speed, the better.

   In order to get really sharp images, you need to get a shutter speed higher than the focal length of your camera. So, a 24-105mm lens would need a shutter speed of 1/125$^{th}$ of a second or higher. A 200mm lens would need a shutter speed of 1/200$^{th}$ of a second or higher to get a good sharp image. However, using this recommendation, a wide-angle lens would recommend a slower shutter setting – a 12-24mm lens would need a minimum setting of 1/24$^{th}$ of a second to get the sharp image – but that would be prone to an amount of camera shake, albeit not as bad as "longer" lenses.

3. **Aperture**

   Allows light to enter the camera, and controls the "depth of field" or the amount of the image that is in focus. A low aperture value – *f*/3.5 – *f*/4 means that the "hole" in the lens is wide open will also give a short depth of field when the subject is close to the lens. (The depth of field increases, the further the subject is from the lens.) A high value – *f*/13 - *f*/22 will have very little apparent depth of field, but doesn't allow much light into the camera.

   So, what do I do to try and get my settings right?

## First – think!

What is the situation for the shot? *Think through these before getting your camera out!*

- Is it a bright day?
- Is it a dull day?
- Is it outdoors or indoors?
- If it's indoors, is it quite low light-levels?
- Am I allowed to use a flash or tripod?
- Do I want movement in the image or everything still?
- What lens am I using?
- What is the maximum focal length of my lens?
- How much do I need in focus?

## Second – ISO

- Bright day? Low
- Dull day? Slightly higher
- Inside? Higher ISO
- Inside and low light levels? Even higher

**Set your ISO accordingly** and before you start shooting.

- On a bright day, set it to the lowest your camera will go – ISO 100 (or lower!)
- On a dull day – ISO 200
- Inside – 400 – 800
- Inside with low light levels – over 800 (but not too high to avoid grainy images)

## Third – Shutter Speed

The higher your shutter speed, the better, unless you want movement in the image

- Check the maximum focal length on your lens (printed on the lens - measured in millimetres)
- While pointing the camera at the subject, half-press the shutter-release button while looking through the viewfinder, or on the LCD screen at the back of the camera.
- Look for the shutter speed. Is the value (in hundredths of a second) larger than the focal length of your lens?
    - If it is greater, compose and take the shot. (e.g., Lens focal length 200mm, shutter-speed 1/250$^{th}$ second)
    - If it is lower, check the aperture value. Is it set at a low value? (f/3.5 – f/4)?
    - If it is this low, you will need to increase the ISO value.

## Fourth – Aperture

As you open the aperture in the lens (the lower the *f*/ value) the amount of the image that is in focus reduces, IF the subject is close to the camera. If you are taking a general image of, say, a cathedral, this reduction in the amount of focus is less noticeable. For outdoor shots, the effect will be minimal as you will most likely be using a higher value aperture setting. However, for 'special effects' such as making a background, or foreground blurred, using a low-value aperture will allow you to focus on the subject and then compose the image (by half pressing the shutter-release while focussing on the subject, then, keeping it half pressed, move the camera to get the desired shot, then press the shutter-release fully.)

## Summary

- Set your ISO according to the conditions
- Check the shutter speed
- If it's lower than your lens' focal length, raise the ISO to match or open up the aperture (lower the *ƒ*/ value)
- Check the aperture for the depth of field required
- Compose and take the shot

## Remember!

This setting will apply to the conditions of the day, or even a part of the shoot if you are moving around. As you change location, keep checking these values. At the end of the shoot, if you have set the ISO high, return it to a lower value to stop you over-exposing subsequent shoots!