Bottisham Village College

KNOWLEDGE ORGANISER

PHOTOGRAPHY

ALL YEAR

KNOWLEDGE ORGANISERS

At Bottisham Village College, we are striving to create a five-year curriculum plan that builds effective revision strategies into homework and lessons, to ensure that students are able to place powerful knowledge into their long-term memories. Additionally, we hope that this will help build effective learning strategies from early in their time here at the college.

Based on evidence, we know that regular recall activities are the best way of achieving this goal and committing powerful knowledge into the students' memories.

At the start of each term, we shall publish all the knowledge organisers that students will require for their studies in each curriculum area. These will cover a range of aspects: facts, dates, characters, quotes, precise definitions and important vocabulary. We are clear: if this fundamental knowledge is secured, students can then develop their higher-level skills of analysis and critical understanding with greater depth.

They will be given an electronic A4 Knowledge Organiser (KO) booklet for each term containing all of the knowledge required. In lessons, Bottisham staff will be regularly testing this fundamental knowledge, using short-quizzes or even more formal "Faculty Knowledge Tests".

The best way to use these organisers at home, is to follow a simple mantra:

1. **Look at a certain aspects of a particular knowledge organiser**
2. **Cover up part of their knowledge organiser**
3. **Write it out from memory**
4. **Check and correct any spelling mistakes, missing bits or mistakes**

PHOTOGRAPHAY basics

THE EXPOSURE TRIANGLE

Each of the three aspects of the triangle relate to light and how it enters and interacts with the camera.

The three elements to photography are:

1. **ISO**: The measure of a digital camera sensor's sensitivity to light
2. **Aperture**: The size of the opening in the lens when a picture is taken
3. **Shutter Speed**: The amount of time that the shutter is open

It is at the intersection of these three elements that an image's exposure is worked out. Any change in one of the elements will impact the others. This means that you can never really isolate just one of the elements alone but always need to consider the others.

ISO

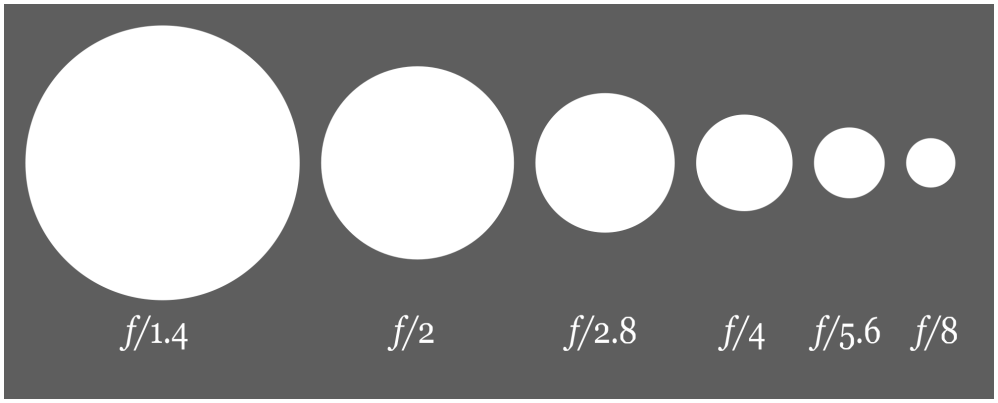
In traditional (film) photography **ISO** (or ASA) was the indication of how sensitive a film was to light. It was measured in numbers (100, 200, 400, 800 etc). The lower the number the lower the sensitivity of the film and the finer the grain in the shots you're taking.

In Digital Photography ISO measures the sensitivity of the image sensor. The same principles apply as in film photography – the lower the number the less sensitive your camera is to light and the finer the grain.

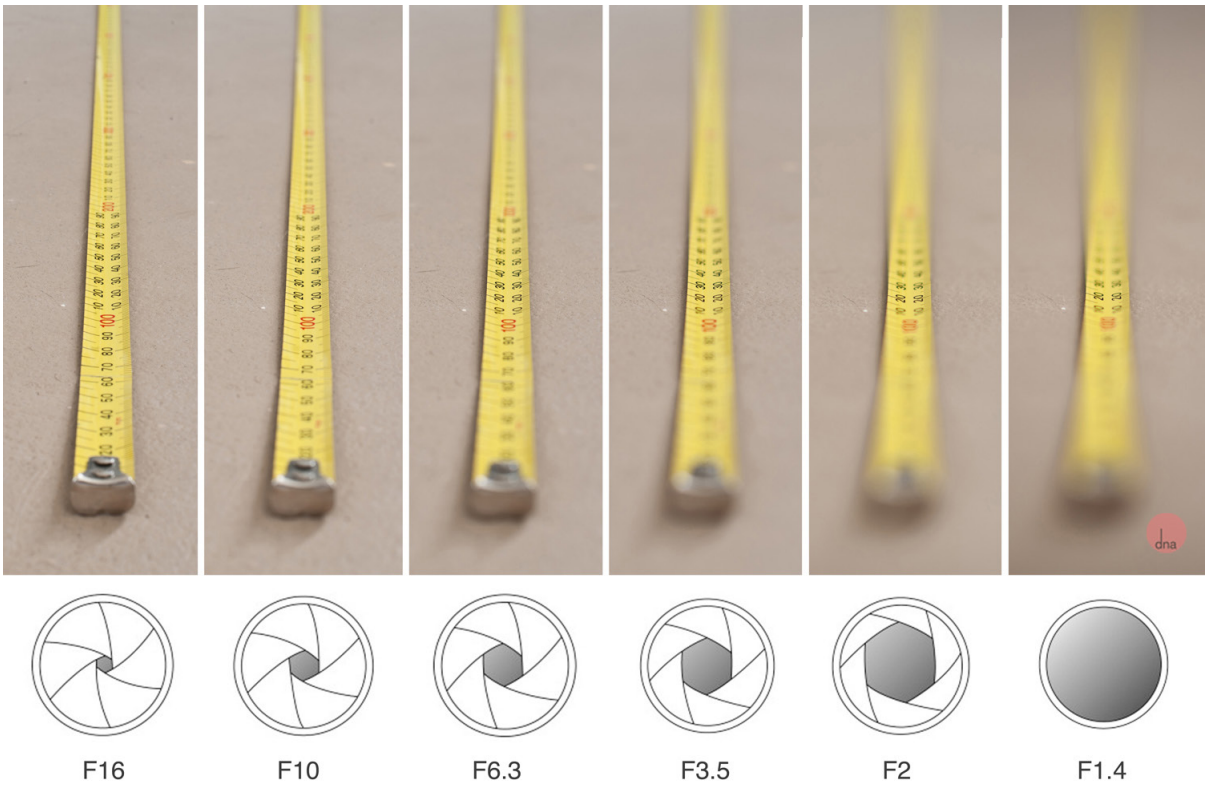
Higher ISO settings are generally used in darker situations to get faster shutter speeds. For example an indoor sports event when you want to freeze the action in lower light. However the higher the ISO you choose the noisier* shots you will get. **By noisier, I mean the amount of grain on an image.*

APERTURE

Aperture is the opening in the lens, when you hit the shutter release button of your camera a hole opens up that allows your cameras image sensor to catch a glimpse of the scene you're wanting to capture. The aperture that you set impacts the size of that hole. The larger the hole the more light that gets in and the smaller the hole the less light.



Aperture is measured in 'f-stops'. They are often referred to as f/number - *for example f/2.8, f/4, f/5.6,f/8,f/22 etc.* Moving from one f-stop to the next doubles or halves the size of the amount of opening in the lens *(and the amount of light getting through).*



Keep in mind that a change in shutter speed from one stop to the next doubles or halves the amount of light that gets in also. This means if you increase one and decrease the other you let the same amount of light in.

DEPTH of FIELD

Depth of Field (DOF) is the amount of your shot that will be in focus. Large depth of field means that most of your image will be in focus whether it's close to the camera or far away.

Small/shallow depth of field means that only part of the image will be in focus and the rest will be fuzzy.
Aperture has a big impact upon depth of field. Large aperture will decrease depth of field while small aperture will give you larger depth of field.
Basically, small numbers mean small DOF and large numbers mean large DOF*. *(*to make it easier to remember*)*

SHUTTER SPEED

Shutter speed is 'the amount of time that the shutter is open'.

In film photography it was the length of time that the film was exposed to the scene you are photographing and similarly in digital photography shutter speed is the length of time that your image sensor 'sees' the scene you're attempting to capture.
Shutter speed is measured in seconds, The bigger the denominator the faster the speed, *for example: 1/1000 is much faster than 1/30.*

However, anything slower than 1/60 is very difficult to use without getting camera shake. Camera shake is when your camera is moving while the shutter is open and results in blur in your photos.

SHUTTER SPEED CONTINUED

FAST SHUTTER SPEED

Takes photo right away.

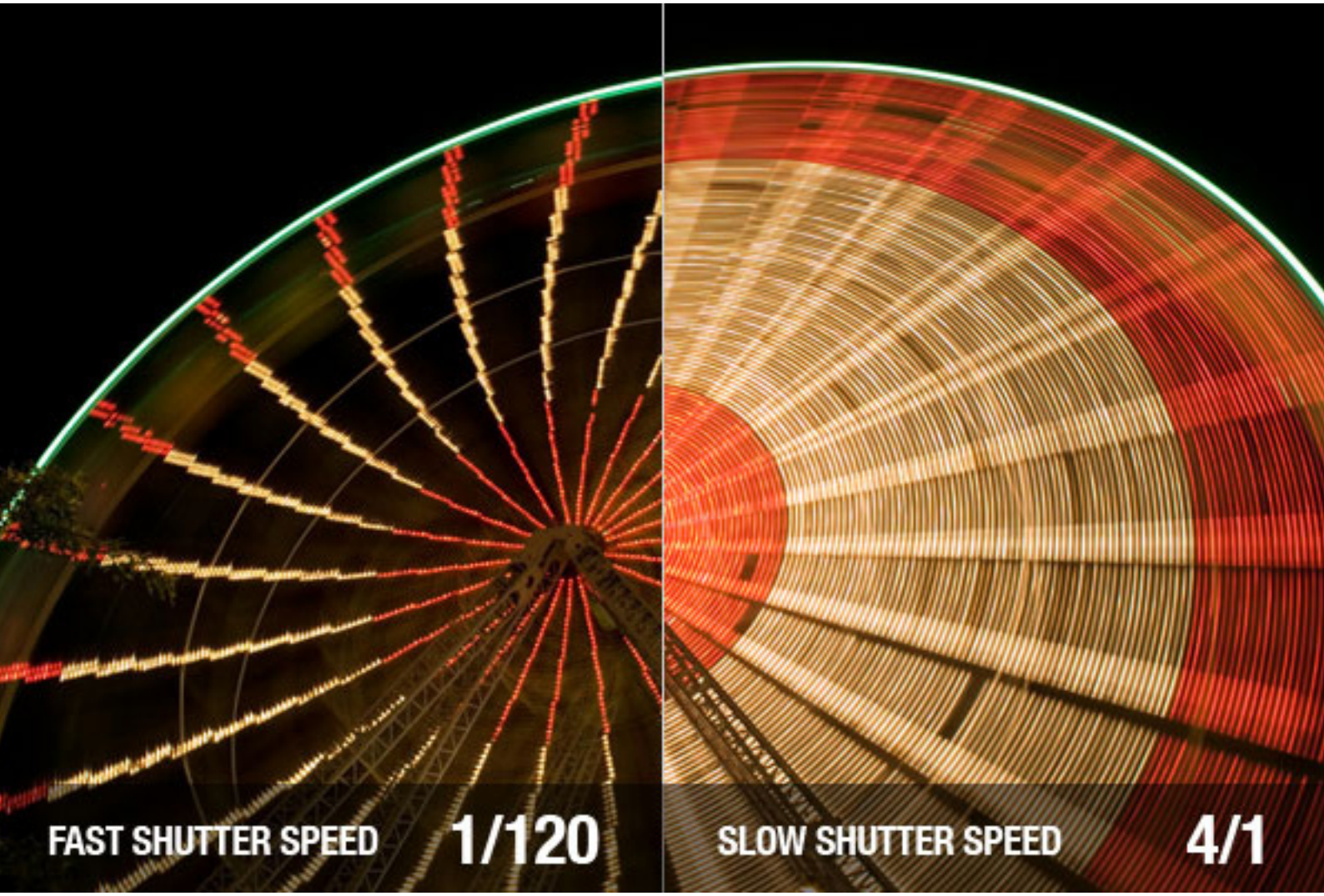
Freezes Motion

SLOW SHUTTER SPEED

Takes time to capure.

Slows Motion

If you're using a slow shutter speed (anything slower than 1/60) you **WILL** need to use a tripod.



DIGITAL LONG EXPOSURE

Some cameras also give you the option for very slow shutter speeds that are not fractions of seconds but are measured in seconds: For example, 1 second, 10 seconds, 30 seconds etc. These are used in very low light situations, when going after special effect and/or when trying to capture a lot of movement in a shot.

For Example, when taking a photo of a waterfall or seascape and want to show how fast the water is flowing, or when taking a shot of star trails and want to show how the stars move over a long period of time, or other moving objects/people. However in all these cases you **NEED** to use a tripod when shooting long exposure or you run the risk of ruing the shots by adding camera movement. *(we don't want camera movement)*. Some cameras give you the option to shoot in 'B' (bulb) mode*.

**Bulb mode lets you keep the shutter open for as long as you hold it down.*

Another thing to consider when choosing shutter speed is the focal length of the lens you are using. Longer focal lengths will accentuate the amount of camera shake you have and so you'll need to choose a faster shutter speed. The 'rule' of thumb to use with focal length is to choose a shutter speed with a denominator that is larger than the focal length of the lens. *For example if you have a lens that is 50mm 1/60th is probably ok but if you have a 200mm lens you'll probably want to shoot at around 1/250.*

COMPOSITION basics

THE RULE OF THIRDS

Imagine that your image is divided into 9 equal segments by 2 vertical and 2 horizontal lines. The rule of thirds says that you should position the most important elements in your scene along these lines, or at the points where they intersect. Doing so will add balance and interest to your photo.

Some cameras even offer an option to superimpose a rule of thirds grid over the LCD screen, making it even easier to use.

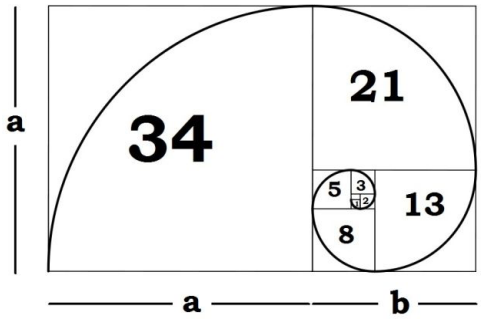
LEADING LINES

When we look at a photo our eye is naturally drawn along lines. By thinking about how you place lines in your composition, you can affect the way we view the image, pulling us into the picture, towards the subject, or on a journey "through" the scene. There are many different types of line - straight, diagonal, curvy, zigzag, radial etc - and each can be used to enhance our photo's composition

SPIRAL COMPOSITION

If you've read The Da Vinci Code, you know **the Fibonacci sequence:** you start with the number 1, add the previous whole number, and make an endless series of numbers with that pattern. *So the series looks like this:*

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89...



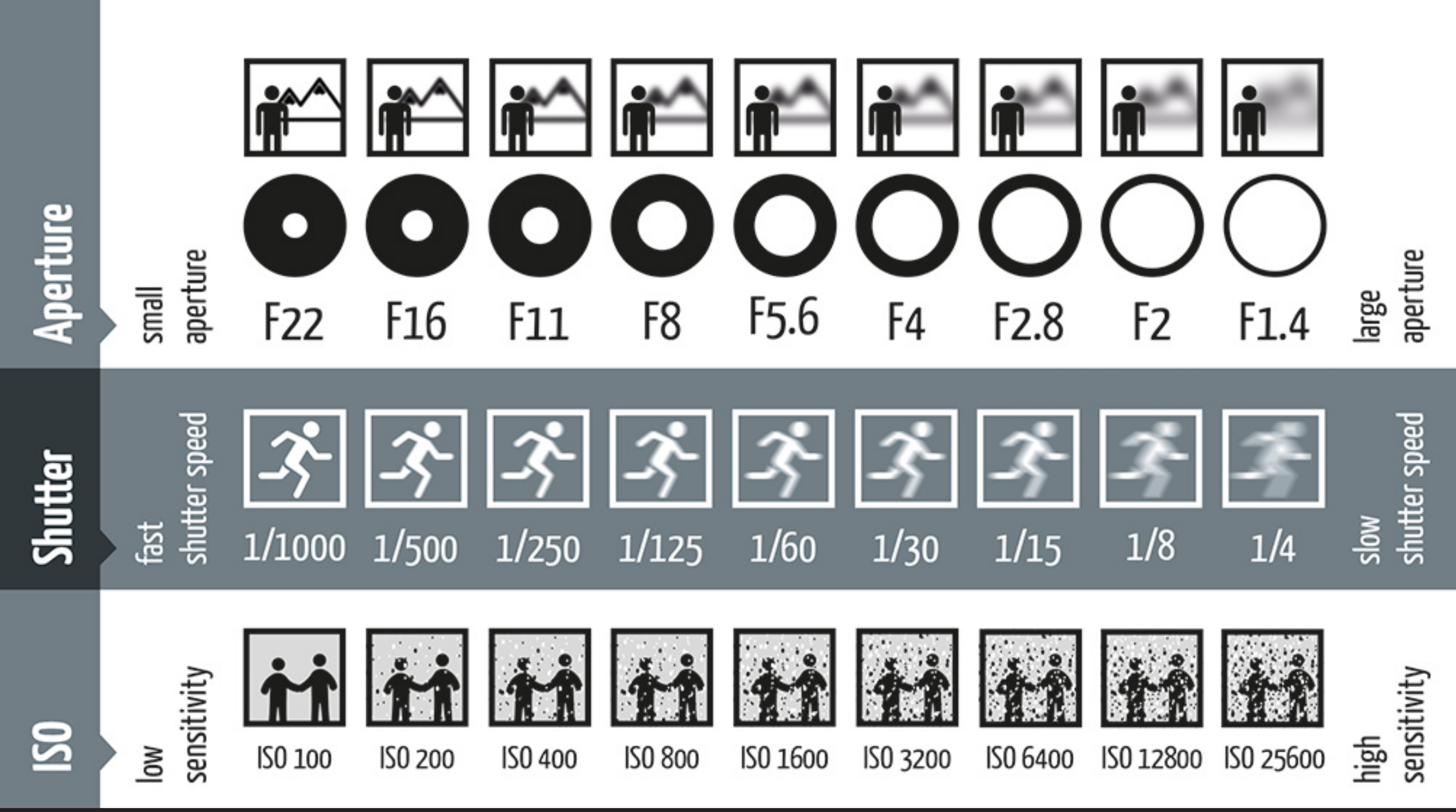
Fibonacci discovered that this "golden spiral" appears in several places throughout nature, from DNA molecules to flower petals, from hurricanes to the Milky Way. **More importantly, the Fibonacci spiral is pleasing to the human eye.**

Adrian Bejan, professor of mechanical engineering at Duke's Pratt School of Engineering, says the golden ratio is aesthetically pleasing because of the evolution of human vision. **Long story short**, our brain has to process everything our eyes see. The quicker it can process something, the more pleasing it is.
Any image with the golden ratio is processed faster by the brain, so it sends a signal that such an image is aesthetically pleasing.

HOW TO USE THE SPIRAL

In terms of actual photography, you don't need to worry about the technical explanation. Fibonacci Spirals are useful for nearly every kind of photography, **but they're especially good for landscapes and wide shots.**

As you can see, the **spiral** basically has a way of leading your eye naturally from the focal point outwards.



PHOTOGRAPHAY cheat sheet