



STUDMS
Educate Yourself

SUBJECT PHOTOGRAPHY

by STUDMS

Our web site: <http://www.studms.com/>

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Introduction

The main advantage of this course is that you will not find unnecessary information and complex terminology here. This course will help the aspiring or hobby photographers to learn or improve their skills in commercial and artistic photography. You can apply these skills for commercial and personal purposes. Some things may seem obvious at first glance, but it should be understood that the basic level of knowledge of photography is different for everyone, and I tried to make this course universal for everyone. These tutorials bring together experience and advice from photographers with many years of professional photography experience.

Our course will consist of five main points:

1. The equipment you are using.

The main idea of this section is that you need to understand the capabilities of your equipment, and select it for your tasks.

2. Necessary knowledge of the basics of photography.

In this part you will receive, in an accessible form, the basic knowledge of the technical side of photography, the process of taking a photograph.

3. Exposure, Light, Background, Angle, Depth of Field.

One of the main components of photography is the correctly chosen position of the photographed object, light, background, foreshortening, as well as the specified settings of the equipment depending on the lighting.

4. Examples of photographs on different equipment (cameras of different levels, smartphones).

We will consider examples of photographs taken with the usage of different equipments, in the same conditions, with approximately the same lighting and angle.

5. Basic post-processing of a photograph: no matter how much you want it, minimal processing of an original photograph is necessary. In this section, I'll show you how to make your photograph as attractive as possible, and quality in terms of color, contrast and clarity.

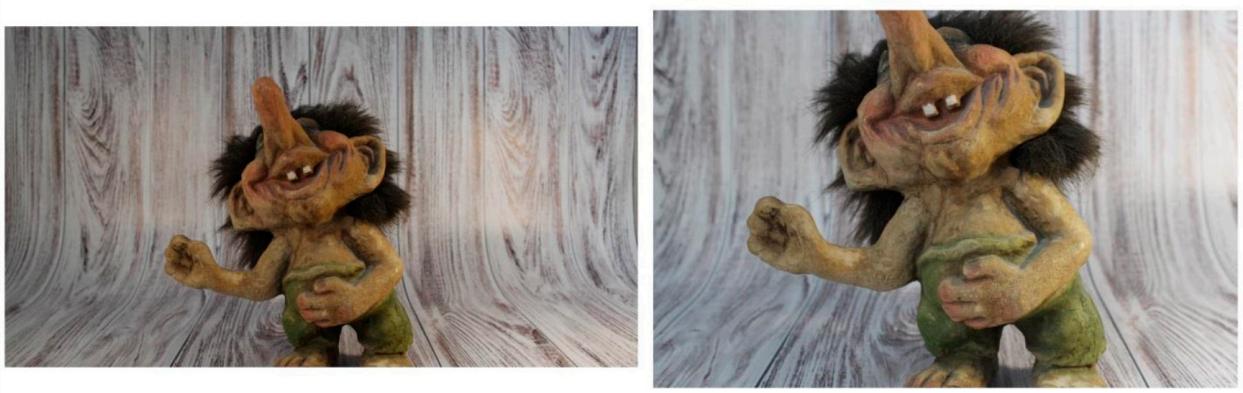
The equipment you are using

We will not consider film cameras or cameras of very old models, because nowadays almost anyone can afford to buy a used basic level camera in the range of \$ 100 – \$ 150. Nowadays, photography is carried out most often either on SLR (single-lens reflex) cameras or on smartphones, and we will talk about them.

First of all, I wanted to dispel the myth of “megapixels”. This myth is that megapixels are of great importance for the beauty and quality of the photograph. The megapixel value in the camera is purely a marketing story. In simple words, the larger this value, the larger the image size can be, but this does not mean at all that the photograph will be of high quality. For example, a camera with a higher megapixel value may take worse photographs than a camera with a lower megapixel value. The quality of the lenses is more important. We can generally divide DSLR (digital single-lens reflex) cameras into full-frame and crop cameras. In simple words, with the same camera settings, full-frame cameras take photographs with the same aspect ratio as film (classic) cameras, and crop cameras take photographs with an aspect ratio that is one and a half times smaller. In most cases, full-frame DSLRs are always larger than crop.



(“full-frame” – left, “crop” – right)



(“full-frame” photograph – left, “crop” photograph – right; with same photography options and conditions)

Almost all DSLR cameras are sold with a factory default (KIT) lens. It should be understood that the “kit” lens refers to the entry level, and most often does not give the results that could be obtained using a non-default lens.



(DSLR with c KIT lens)

It is widely believed among novice photographers that it is enough to buy a more expensive model of a camera, and the quality of a photograph will improve, but this is not always the case. Improving the quality of a photograph can be significant if you switch from a “crop” camera to a full-frame camera. Basically, changing the “body” (this is the name of a camera without a lens) more affects the convenience of a photographer than the quality of a photograph.

Much important for DSLR cameras is the lens and its quality. To begin with, lenses can be divided into two groups “fixed” and “zoom”. By their name, I think you can guess that in the first type of lens some parameter is always fixed, but in the second it is not. It’s about focal length. The larger the focal length value, the smaller the angle of view the camera will capture. Quite simply, the larger this value, the further you will have to stand from the subject if you want to photograph it in full. In the case of “zoom” lenses, the focal length value may change. In this regard, “zoom” lenses are more expensive than “prime” if we are talking about lenses that are on the same level in terms of lens quality.

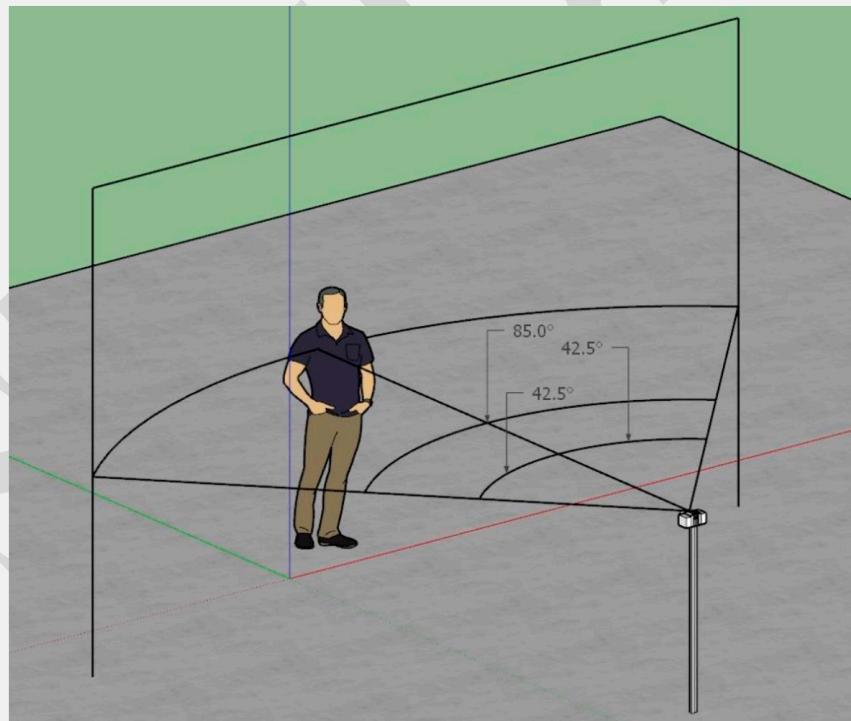


(“zoom lens” – left, “fixed lens” – right)

You already know that cameras are divided into full frame and crop cameras. Each of the cameras has its own system of attachment and connection to the lens called (bayonet). You should pay attention to this marking for the correct hardware connection to occur. This information is always written on the lens. You can always find out what mount your camera has by typing the camera model and looking at the characteristics in Google. Manufacturers, naturally, try to make them different in order to promote their new products, as well as to avoid competition.

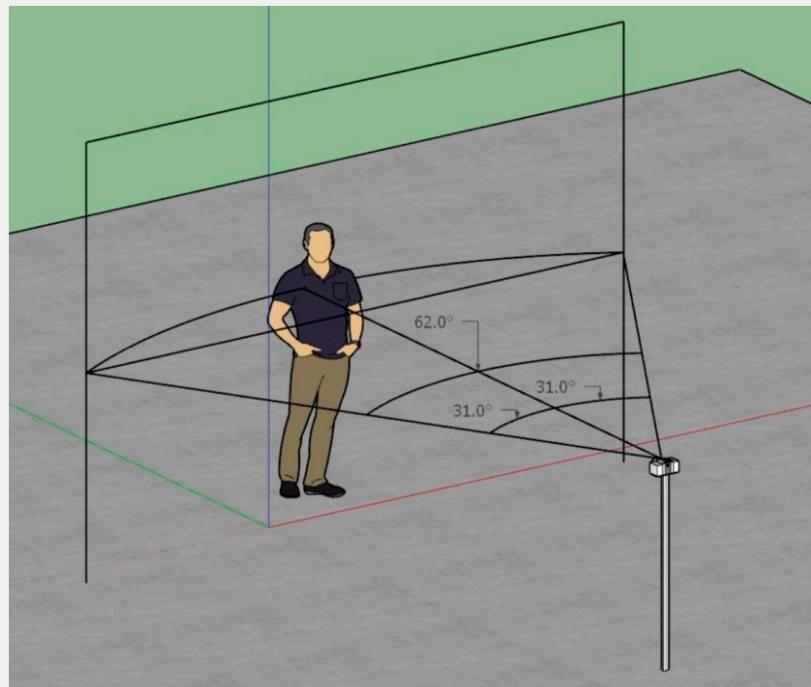
Let's make a short division by focal length (division only by lenses that photographers most often use for the most common tasks):

- 24 - 28 mm – wide-angle (to photograph architecture and objects of large sizes, they are used in cases when you need to show the subject completely, but there is no way to move away from it at a great distance. Also it is good for photography in confined spaces. The viewing angle of such lenses is approximately 85 - 75 degrees.



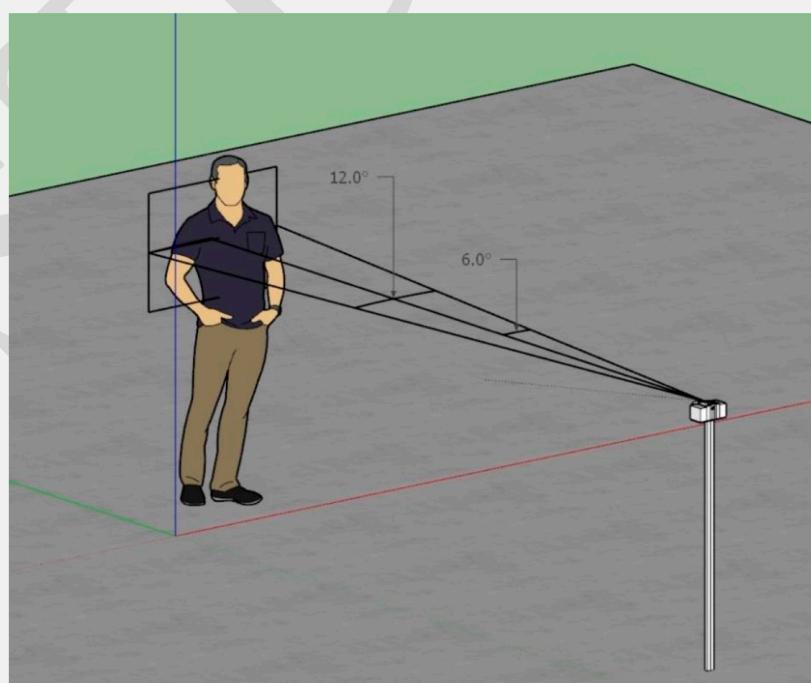
(viewing angle of wide-angle lens 24 mm)

- 35 - 50 mm – normal (for subject and portrait photography, the optimal solution for almost any common tasks. The viewing angle is optimal 62 - 46 degrees)



(viewing angle of portrait – normal lens 35 mm)

- 80 - 200 mm – telephotograph (lenses for architectural photography, for nature photography, when the photographed object is at a great distance from the photographer)



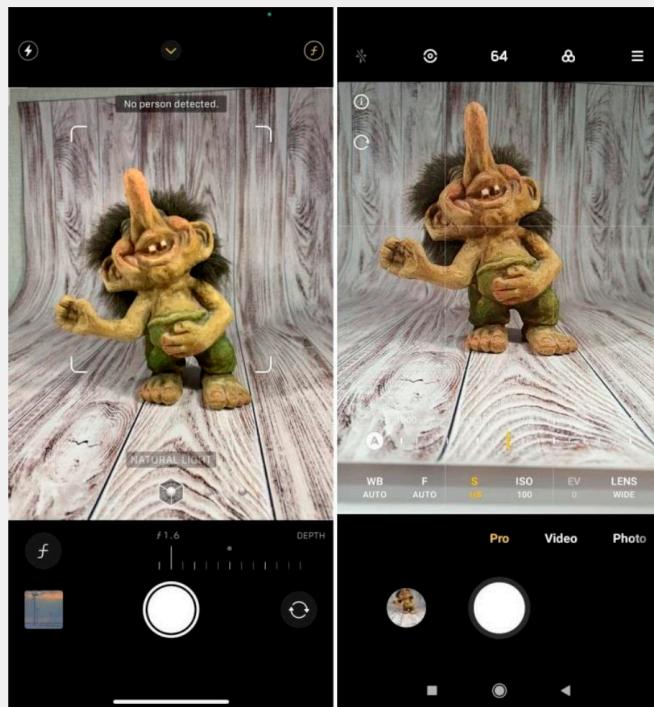
(Viewing angle of telephotograph lens 200 mm)

I would also like to say separately about macro lenses. They are designed to show all the smallest details of small objects. Whether it's a snowflake or an ant. They are more expensive than conventional lens types and are for specialized applications.



(Macro photograph of a metal brush for dishes)

Let's consider smartphones. Nowadays, absolutely every smartphone has a camera. When selling smartphones, they always use the above mentioned marketing ploy with megapixels. This myth applies in exactly the same way to smartphones as it does to cameras. If you take Apple smartphones with a 12 mpx camera and Xiaomi with 64 mpx and take a photograph on them, this does not mean that the image on Apple will turn out to be of worse quality. The quality of the lenses in the camera, as well as the software post-processing in smartphones, plays a very important role. Of course, all this is generalized much, and I'm not talking here about the size of pixels, the diagonal of the matrix, because this course is not about that a bit, and my goal is to give you the knowledge you need without the fluff. In general, smartphones always take a photograph both in auto mode and in manual mode, and almost always the options (shutter speed, aperture and sensor light sensitivity) are the same as in SLR cameras.



(Example of Manual mode in IOS and Android)

For subject photography, it is always better to have a flash, it will give much better results. Most “crop” cameras and smartphones are equipped with flash by default. Using the flash, you can remove shadows from the photographed subject, as well as give a richer photograph. You don't always need a super flash, sometimes even correctly placed fluorescent light bulbs will be enough.

Now you can choose or analyze your equipment for subject photography, and draw the right conclusions for yourself. Maybe you take a fresh look at your equipment and decide to replace something.

It should be remembered that the high price tag of your equipment will not always give a great result, but with the right knowledge of the basics of photography, you can get the most out of it.

Essential knowledge of the basics of photography

Several suggestions about what a photograph is. It's quite simple. A photograph is the result of the reflection of light from any object into the camera lens.

As promised, without complicated terminology and as simple as possible. You don't need to understand how lenses and sensors work. Remember and understand for yourselves only four concepts that absolutely all photographers use.

Have you ever had a situation where you got a photograph that was too bright or too dark? If so, it's because there was too much or too little light hitting the sensor. A **Matrix** is an element that receives light passing through a lens. If the matrix takes on light for too long, then the photograph turns out to be very bright, and sometimes we can get just a solid white image at all. If the light hits the sensor for too short a period of time, then the photograph turns out to be dark.

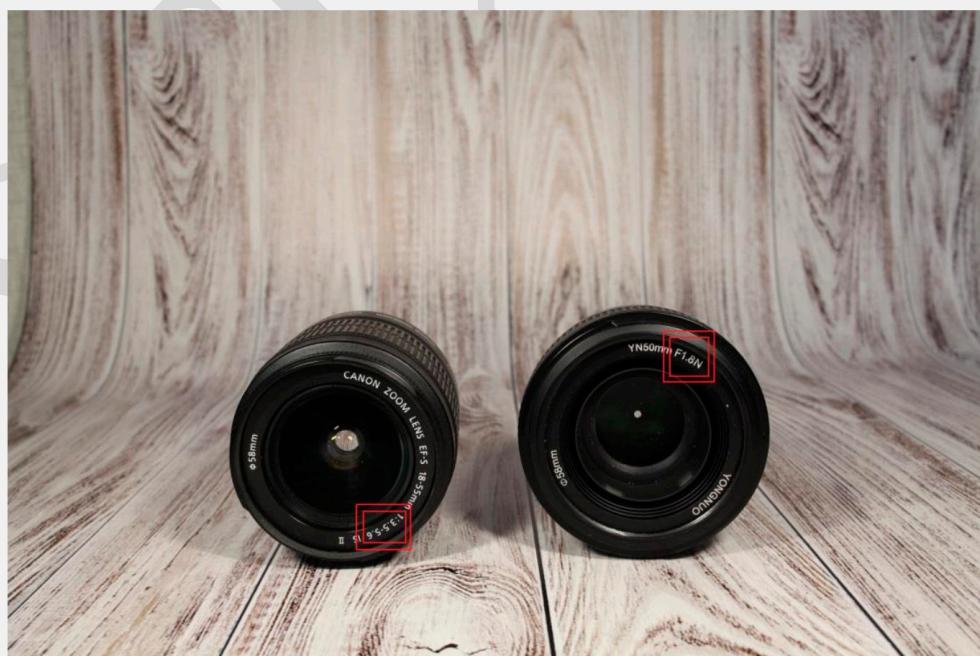


(Matrix took too little light – left; Matrix took too much light – right)

In order to interrupt and regulate the amount of light entering the matrix through the lens, there is a mechanism that is responsible for this. This mechanism can create a larger or smaller hole in order to allow a certain amount of light to pass to the matrix. The parameter for the size of this hole is called **Aperture** and is denoted as (f). You can often see this setting on lenses. For what it is important, you will learn reading further.



(Aperture in menu)



(Also you could see aperture on lens)

While you are taking a photograph, this hole closes and opens at a certain speed. The faster the mechanism closes and opens, the less light enters the matrix through the lens, and the darker the image will be. The time for which the mechanism is triggered can and must be set manually, and it is called **Shutter Speed or Exposure Time**.

The shutter speed is most often set using fractions of a second. For example, 1/200 * – this means that the shutter speed will occur in a time of one two hundredth of a second. For different levels of equipment, the maximum and minimum of this parameter may differ. It all depends on the level of equipment, but average values are always sufficient for high-quality photographs.



(Shutter Speed or Exposure Time in menu)

I would like to say a few words about the physical stability of photographic equipment. The photographer should always make sure that the equipment is free of jitter and vibration while the photograph is being taken. You should always adjust your body position to minimize hand shake. The longer the shutter speed, the more stable the equipment and everything in the photograph should be. After all, photographing is a way to capture the moment. Sometimes it's a split second. And if everything moves and changes, then nothing will come out and a photograph will be blurred, with all the

movements of the photographer, and the movements of everything that was in the photograph. In professional photography, a tripod is most often used. Feel free to use the most ridiculous poses when stabilizing the camera in your hands, because in this case, the result is important, and not how the process looks. One option is to purchase a low-cost tripod.



(Low-cost tripod for 20 \$ will greatly expand your possibilities)

So, there is still the matrix's **Photographic Sensitivity**. This parameter is referred to as **ISO** and is set manually. The higher it is, the more sensitive the matrix will be to light, and the less light is needed for a normal photograph. The high value of light sensitivity is most often used in conditions of insufficient amount of light for a photograph, but remember, the higher this parameter is, the more this leads to deterioration in quality, and leads to the appearance of noise in the photograph.



(You can see ISO menu and change it)



(The less ISO is, the better and more detailed a photograph will be. But remember that you might need longer exposure time)

If possible, you should always use the minimum value of photographic sensitivity in order to get a photograph with a minimum amount of noise, but we must not forget that it will take more time to collect light for the photograph (exposure parameter), and therefore long-term stability of the photographer and the photographed composition is required.

As you already understood, all these four concepts closely interact with each other, and with their help you can adjust the equipment for any amount of light. These are four basic concepts that all photographers always use. By understanding these basics and how they interact, you can get great results. Remember that the concepts described above are applicable to any photography, using any equipment. Try to find all these settings in your equipment and change them. This can be done in the manual mode denoted by the letter “M”. Now let's move on to the photography process itself, and positioning.



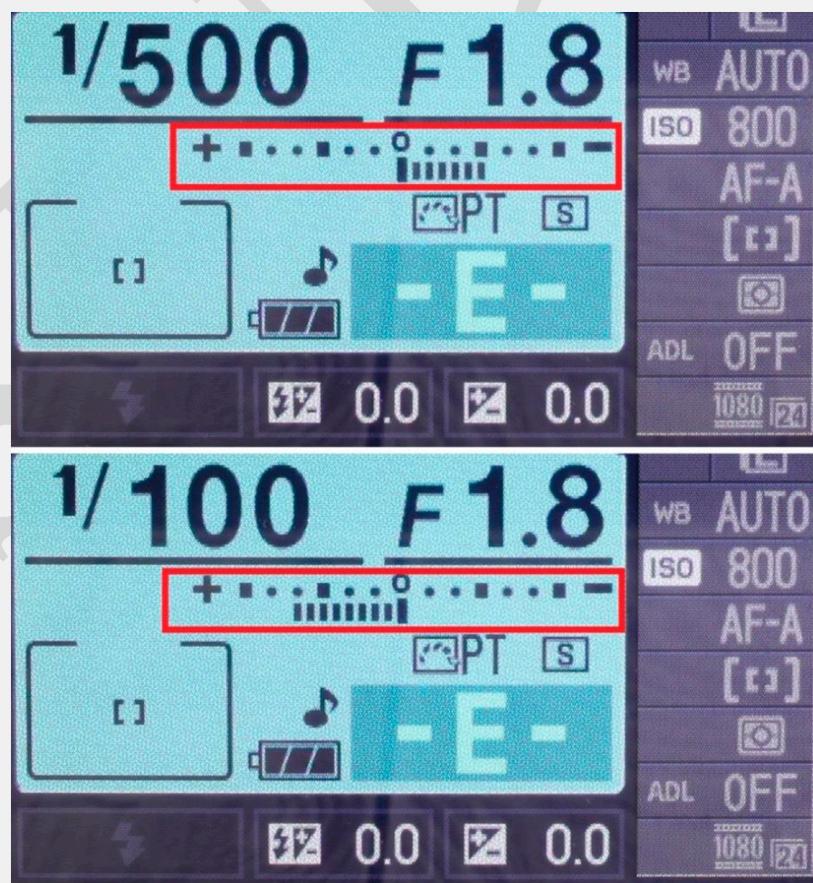
(Manual mode in DSLR always mark with M)

Exposure, Light, Background, Foreshortening, Grip

In order to denote a combination of all four options described above, the term “Exposure” was coined. When you already know the meaning of the words “Matrix”, “Aperture”, “Exposure Time (Shutter Speed)” and “Sensitivity”, it is easier to understand the term “Exposure”. If you want a little difficulty, then exposure is a term that describes how much light hits the sensor during photography.

In photographic equipment, there is always an exposure scale. When the marker is in the center, then by the standard of equipment the exposure is normal, and then your imagination turns on. Some people like darker photographs (a marker with a minus), and someone lighter (a marker with a plus). Do not forget that photography is, first of all, creativity.

Each time you change one of the exposure settings, the marker will change its position on the scale.



(Exposure scale in DSLR Nikon)

Light. There is never too much light. Most often it will not be enough. In subject, as in any other photography, it is very important for a photograph not to have a sign of a photographer. Very often, a photographer forgets about his or her shadow. Sometimes his or her shadow can fall into the frame, and it must always be looked after. Everything will depend on the photography conditions and location. Correctly placed light will help to get rid of unnecessary shadows, or create the desired shadows. The studios have softboxes for this purpose. Softboxes are rectangular flashes that help create soft shadows and also make the subject light enough for high detail. For subject photography, correctly spaced fluorescent light bulbs will be enough. Making sure the light comes from different sides of your subject will help you to direct the shadow in the right direction.

If you are photographing at home, try not to place your subject under the main light indoors. Light should always fall on the object so that its shadow would go back. The exception is when you decide that the shadow should be part of the frame. Always try to frame your photograph so that the light is directed towards the scene and away from the camera. To do this, you can make a simple light guide tool out of paper.



(Home "micro" =) studio)

An important element of photography is a photography background. The background should be solid, and also go behind and under the object. This will give the illusion that the object is floating in the air. You can use either plain fabric or paper. If you have a little money, then on the Internet you can buy and pick up a photography background for every taste. It can be placed on anything and can be easily removed afterwards. In professional studios, photography backgrounds of large sizes are used on tripods. Of course, a solid background is not taboo, because you can always use a background with a texture (pattern), but later, if you want to quickly change the background color in post-processing, this can become kind of problem.



(The vinyl background looks like a real wood and costs \$ 4.5)

The view should always convey all the advantages and the type of product or object. This is obvious, but many people forget to photograph the little things. If, for example, you are photographing with your old DSLR, in order to sell it and to buy a newer model, then you must show the entire set of goods: the original packaging (if preserved), documents, photograph important mountings, as well as the DSLR itself. If there are any defects in the product, then simply turn the product a little around, and

slightly change the position of the camera, focusing on the best side of the subject. Any flaw can always be shown in such a way that it will NOT reduce the cost. Take photographs from all angles, and always show the perspective correctly.



(Examples of “views” for selling)

It is also important to keep an eye on the horizon. The subject being photographed should always be parallel to the edges of the image whenever possible. There may be exceptions, if this is a creative idea of the author of the photograph. If you are doing portrait photography, you can easily navigate by the eyes of the person you are photographing. The eyes should be in line. Otherwise, it will be possible to say that the horizon is littered. The horizon doesn't always have to be perfect because it can be aligned at the post-processing stage of the photograph.



(Horizon is littered)

Try to set the minimum possible value of light sensitivity (ISO), depending on the lighting, in order to avoid noise in the photograph, and to improve the quality of photography. Remember to adjust the exposure on the scale, and always take photographs in manual mode (M).

An important creative tool is DOF or simply depth of field, which indicates how a photograph is focused. If most of your subjects are in focus, including the foreground, this indicates that the photograph has a greater depth of field.



(Depth of Field effect)

In order to achieve this effect, always set the lowest aperture value in the settings. I hope I won't confuse you if I tell you that the smallest aperture value means that the aperture is maximum open. The thing is that the numerical value of the aperture is arranged in the same way as the shutter speed. The aperture value (f 1: 1.8) means that the aperture is open as much as possible, and the depth of field will be as large as possible, while the value (f 1: 11) means that the aperture lets in less light, and objects behind the main scene will be clearer.

Once you've got a raw photograph, we can move on to post-processing the photograph. This is not always required, but it can greatly increase the appeal of your photographs.

Examples of photographs on different equipment (cameras of different levels, smartphones)

Let's take a look at examples of photographs taken with the following equipment:

- Canon 5D Mark 2 (body); Yongnuo 35 mm f 2.0 (lens); Average cost of used equipment – 500 \$
- Nikon D3100 (body); Youngnuo 50 mm f 1.8 (lens); Average cost of used equipment – 150 \$
- Smartphone Redmi Note 8 Pro; Average cost of new phone – 200 \$
- Smartphone Apple XR; Average cost of new phone – 600 \$

All photographs were taken under the same conditions, with the same lighting, and also shown without any post-processing.



(Conditions of photography)



Canon EOS 5D Mark II (body) Yongnuo 35 mm f 2.0 (lens)

Mode: M; Aperture: f/3.2; Exposure Time: 1/10 sec; ISO: 100; White balance: Auto;



NIKON D3100 (body) Yongnuo 50 mm f 1.8 (lens)

Mode: M; Aperture: f/3.5 ; Exposure Time: 1/10 sec; ISO: 100; White balance: Auto;



Redmi Note 8 Pro

Mode: M; Aperture: f/1.9; Exposure Time: 1/4 sec; ISO: 100; White balance: Auto;



iPhone XR

Mode: M; Aperture: f/1.8; Exposure Time: 1/49 sec; ISO: 125; White balance: Auto;

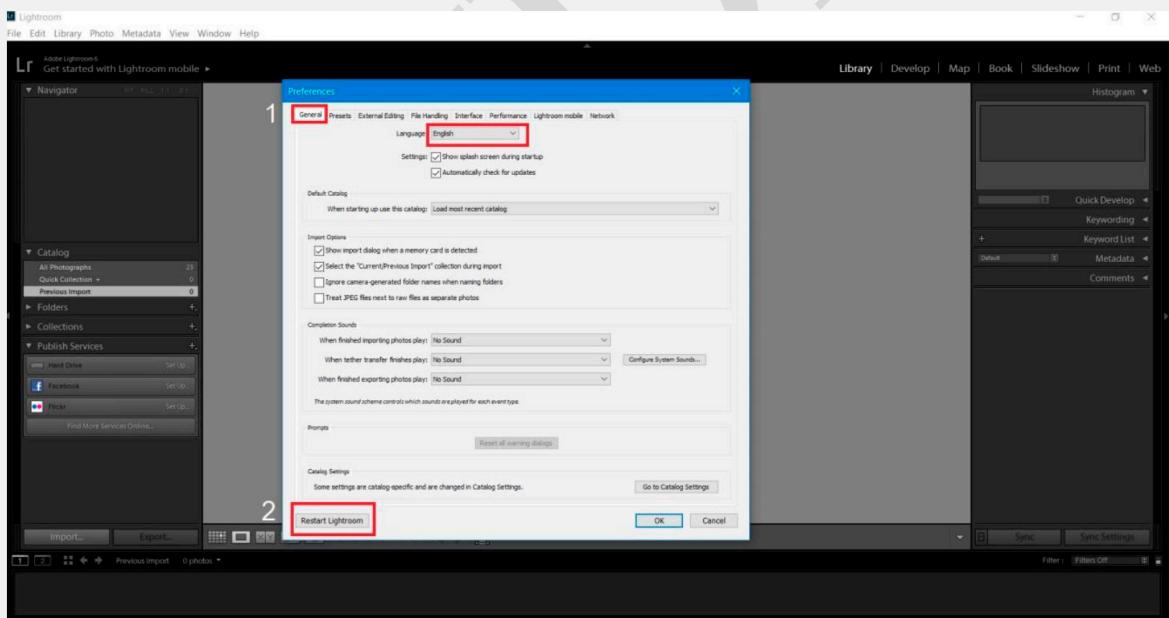
Analyze the parameters that were set for these photographs. They are slightly different, but close to each other.

After the photographs are taken, you can start post-processing. We'll make some color adjustments and also crop the borders of the images. Based on the examples of the photographs, we can conclude and say that most people will not notice a significant difference. You should not buy expensive equipment in order to get a good, "marketable" result. After processing, the photographs will become even better, and we will talk about this in the next section.

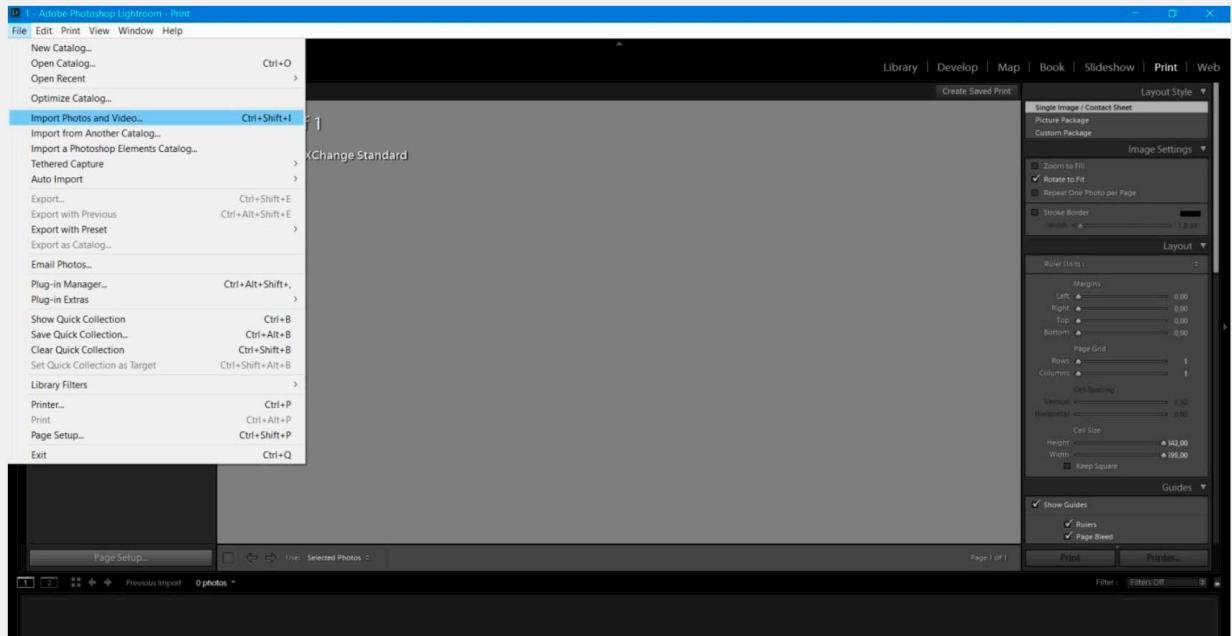
Basic photograph post-processing

After the photograph is taken, you have a raw image. A raw image is a photograph taken directly with the help of photographic equipment, and without any processing. At this stage, with the help of programs that are always heard by everyone, you can correct or significantly improve the quality of your images. In this case, one Lightroom program is enough for basic processing.

You can try to install it on your laptop or computer in “any” way available to you. The cost of the program by subscription on the official website <https://www.adobe.com/> Lightroom + Photographshop is \$ 10. After you have opened the program, you can change the language menu to whatever you prefer. You can do this by clicking Edit > Preferences in the top menu. Then, in the window that opens, click on the “Main” tab (1), select the desired language, and click the “Restart Lightroom” button (2).

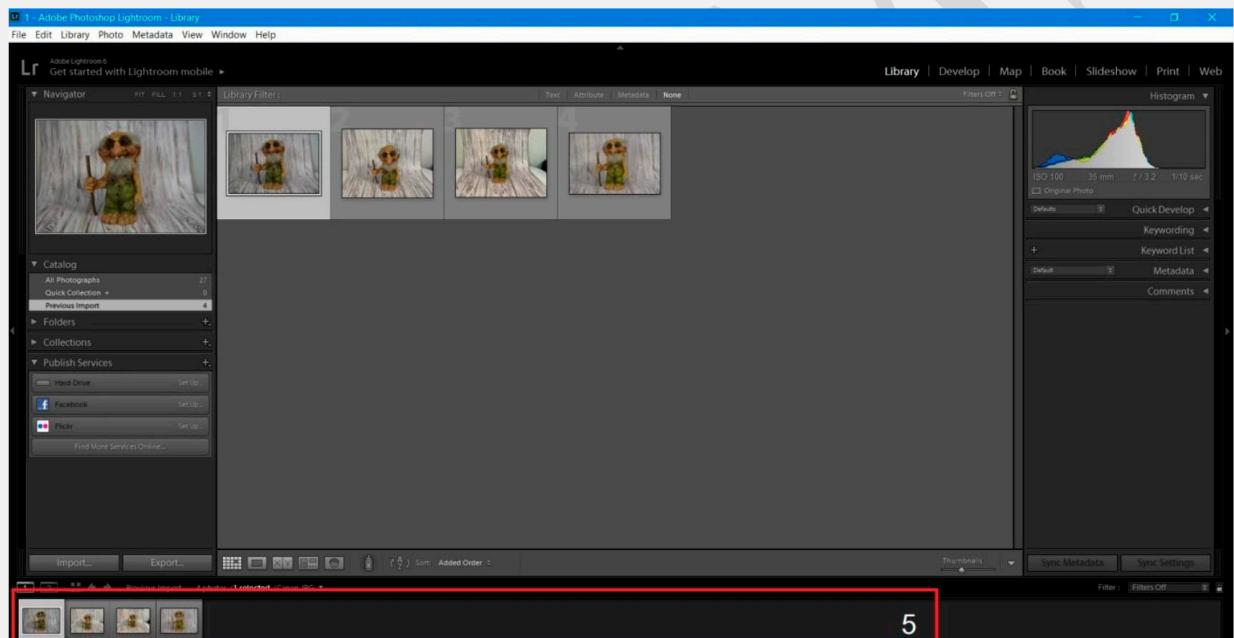
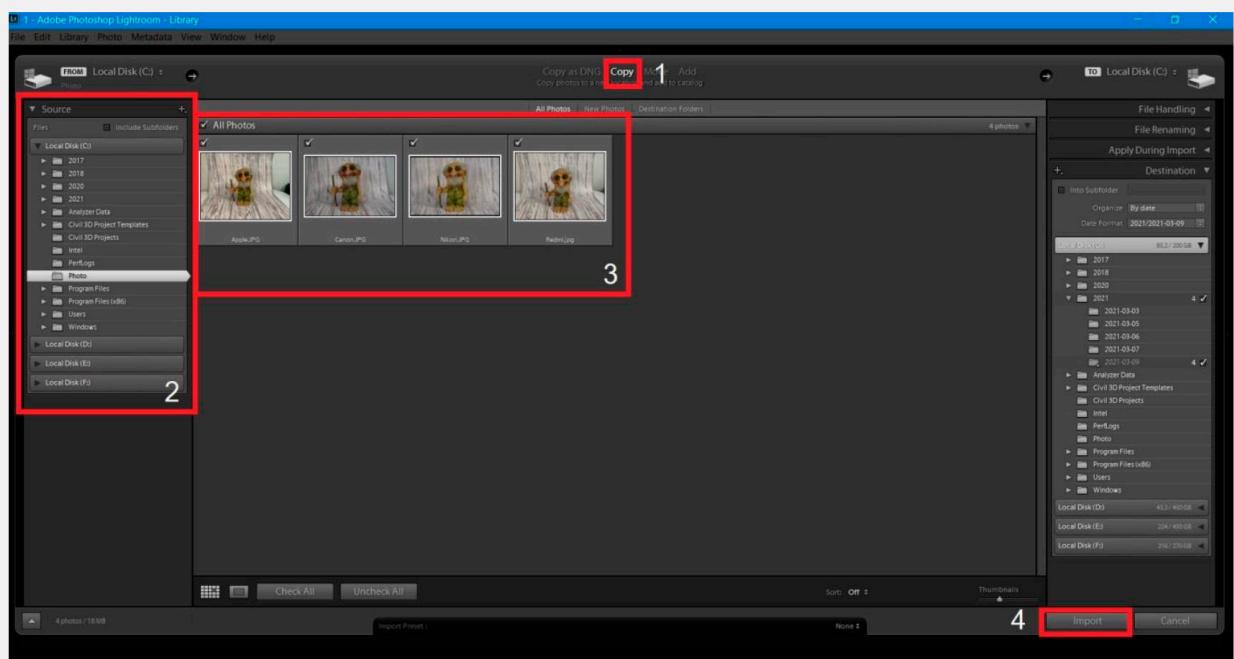


After you have opened the program, you click the file - import photographs and videos.



(You can also use the Ctrl+Shift+i keyboard shortcut)

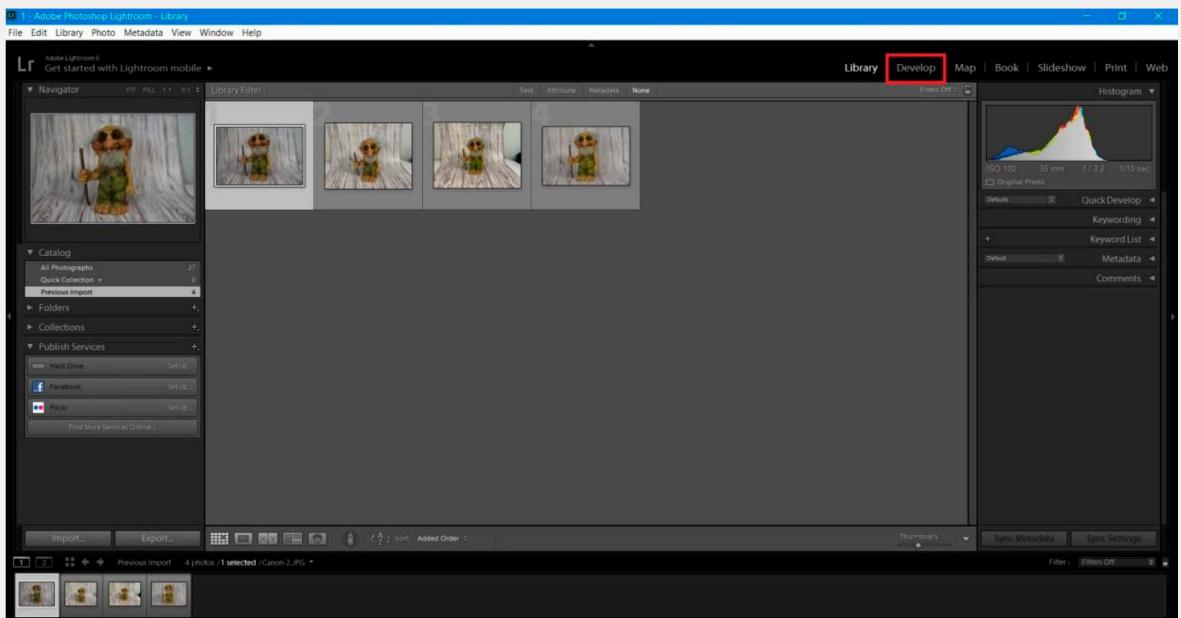
- 1) After that, the file import window will open. At the top of this window, select the “Copy” option (1). This is necessary in order for you to work with a copy of those files that you select without changing the original.
- 2) On the left side of the window, you will see a list of your disks (2). Select the path to your photographs in it, and click on the folder where they are saved.
- 3) In the next step, a list of your photographs will appear in the center of the import window (3).
- 4) Check the photographs that you would like to import, and click the import button located in the lower right corner (4).
- 5) The list of photographs will be displayed at the bottom of the screen (5).



(Everything is pretty intuitive.

Feel free to click anything and experiment with the settings)

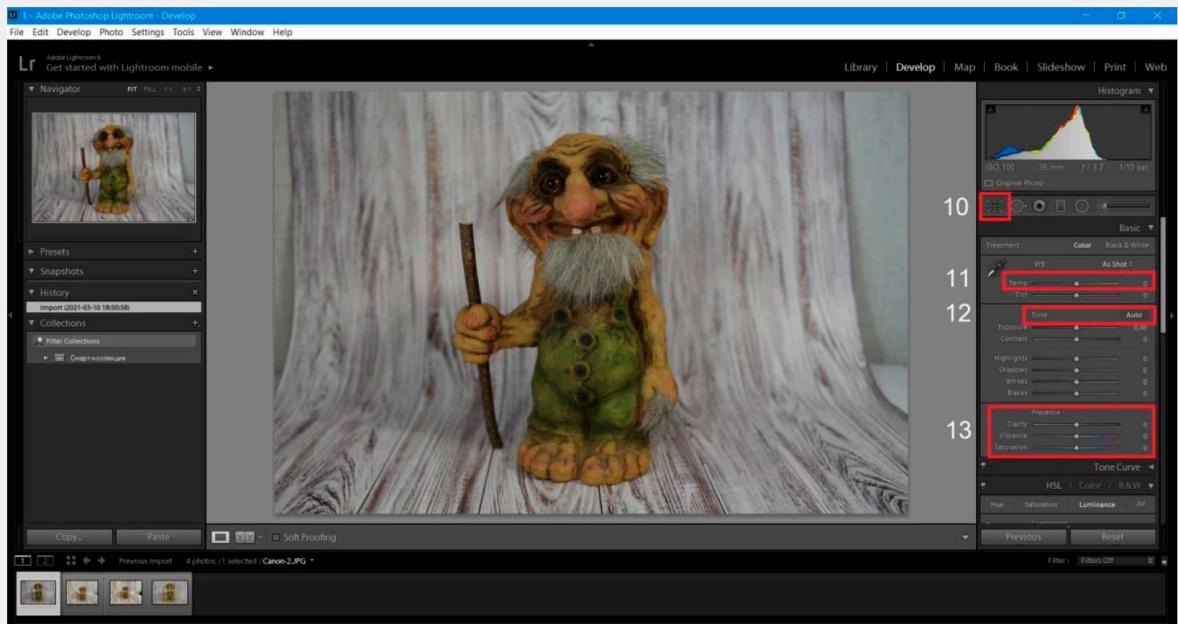
We proceed directly to the processing of the photograph. In the upper right corner, select the processing button



(Go to photo processing)

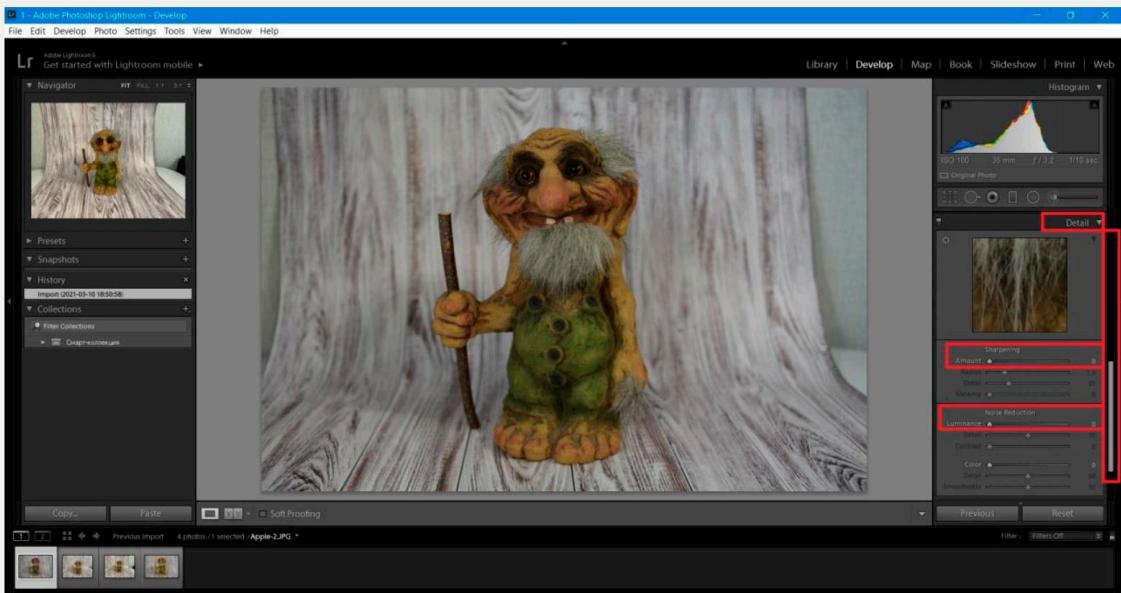
The most important thing that you will need at the initial level is a cropping tool (leveling the horizon), as well as adjusting the tone and sharpness of the photograph.

All of these tools are on the right side of the screen, and I'll briefly go over the most essential ones. You do not need to know how it all works; the main thing is practical knowledge. So, without the fluff.



(Feel free to click anything and experiment with the settings)

- 1) Cropping is the same leveling of the horizon. You can straighten and crop the photograph by rotating it a little (10).
- 2) Temperature – with this tool you can adjust the light, making it warmer or colder (11).
- 3) Opposite the Tone options there is a button “Auto”, first click it, and then change the settings to your liking (12).
- 4) Clarity, vibrancy, saturation – these parameters will correct your image in color. But be careful, if you make these parameters too high, you risk losing the naturalness of the photograph. It should be remembered that during the post-processing stage we only want to make a few adjustments, and not completely change the image (13).
- 5) If you scroll in the processing window, then you will see the detailing tools: “sharpening” and “noise reduction”. Sharpness is responsible for the clarity and drawing of the photograph, and noise is, as we already said, a factor affecting the quality and detail of the image (page 14). There are many sensitive settings in these two parameters, but only the first line in each setting is important to us. They can significantly improve the image.



(Scroll down below in the editor window and find the sharpness settings)

It is impossible to give you clear numbers for each adjustment item, as each photograph is taken under individual lighting and exposure. With time, you will learn to feel all this.

After the images are processed, click in the upper left corner of the “File” button, then “Export”, select the location for exporting the photograph, and again click the “Export” button in the window opened. The photographs will be saved in the specified directory.

Below you can see examples of photographs taken earlier after processing.



(Canon)



(Nikon)



(Redmi)



(Apple)

So, after completing our “subject photography” course, you know how to get the most out of your equipment and what you need to do to get quality images. It is not necessary to spend money on expensive camera, light, photographic studio in order to get the result you want. You need necessary knowledge of photography basics, as well as to understand the basic concepts and use them correctly in the photography process. This was our main goal to tell you about the main aspects of photography briefly and easily, without unnecessary information. We hope and believe that we succeeded it =)

Remember that the main skill in the 21st century is the ability to self-development, and also not to stop on the half way. Good luck in your endeavors!