week 18

WORKING IN LOW LIGHT

At some point, all photographers have to work in low-light conditions. Whether you're snapping friends on an evening out, shooting a wedding party in a dimly lit hall, or capturing a landscape at dusk, it's important to understand the basics of shooting when light conditions are not at their best, without having to rely on your flash.

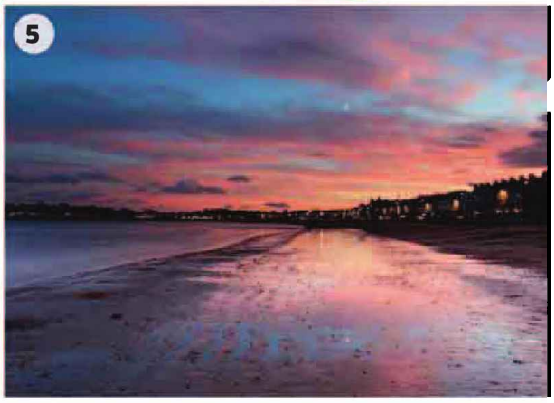
In this module, you will:

- **discover the ways** your camera can be adjusted to cope with low light;
- **get to grips with the basics** of low-light photography, and find out how it can lead to a whole new world of creativity;
- **learn how to crank up the ISO,** use a larger aperture, and slow down the shutter speed;
- **practice getting the best results** in low-light conditions.
- **identify some of the most common** low-light problems, and find out how to correct them;
- **reassess what you've learned** to see if you're ready to progress to the next chapter.

Let's begin...

TEST YOUR KNOWLEDGE

When does low light work?



Taking shots when light is limited may pose difficulties, but it also offers opportunities for creativity using various light-enhancing techniques. Can you match the descriptions here with the correct images? Try to pick the best match.

A High ISO, widest aperture: Can capture subjects that are lit only by candlelight.

B Wide aperture: Gathers whatever available light there is in a shadowy street scene.

C High ISO: Allows you to shoot a moving subject without the need for flash.

D High ISO, wide aperture: Captures the feel of an event dominated by stage lighting.

E High ISO: Allows you to take photos using a single low light source, such as a TV.

F Tripod, slow shutter speed: Shows the details in an outdoor scene where there's little light.

G Long exposure, narrow aperture, and tripod: Can render a deep depth of field, even when shooting in low light.

H High ISO: Helps to convey a low-lit, flickering interior without the need for flash.

ANSWERS

A/ 7: Candlelit woman
B/ 4: Street scene in Havana, Cuba
C/ 8: Man playing a guitar
D/ 3: Woman at a gig
E/ 1: Men playing computer games
F/ 6: Tower Bridge, London, UK
G/ 5: Weymouth Beach, Dorset, UK
H/ 2: Byzantine cistern in Istanbul, Turkey

NEED TO KNOW

- Don't put your camera away just because the light is fading. Modern cameras have the sensitivity to work under low-light conditions, but there are techniques you can employ to improve your camera's performance.
- Change the aperture to let more light in through the lens and onto the sensor.
- Slow down your shutter speed, but remember that exposing the sensor for longer will require a steady hand.
- You can use a tripod if your shutter speed becomes too slow for you to keep the camera stable by hand.
- Push up your ISO to adjust the camera's sensitivity to light.
- As the light fades, it's worth exploring how the color of light changes too.

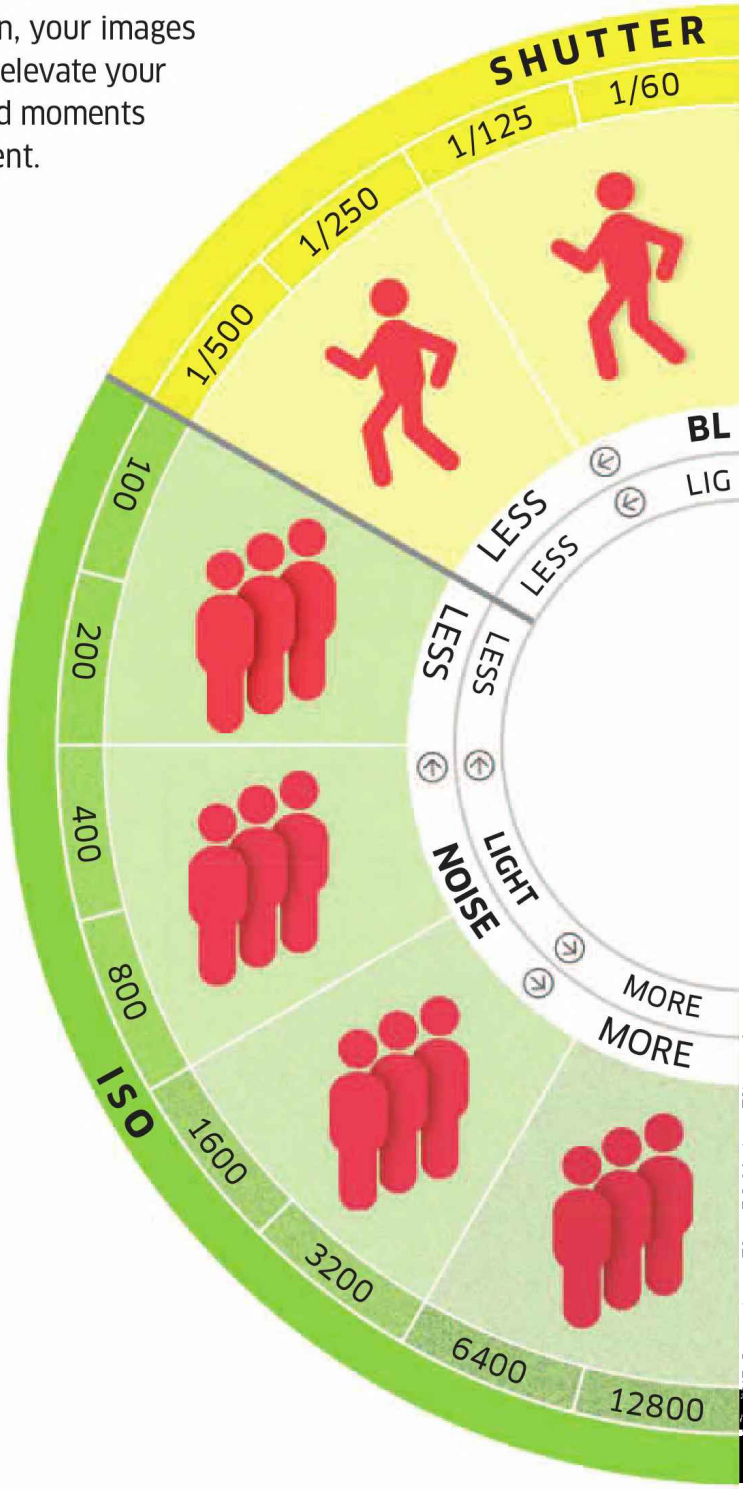
Review these points and see how they relate to the photos shown here

Ambient light

When you are shooting with only limited illumination, your images will take on the colors of the ambient light. This can elevate your photographs from mere pictures to dramatic recorded moments that convey the mood and emotion of a place or event.

Capturing light

Photographers use a variety of techniques to get the most from low-light conditions. However, these methods can also reduce depth of field, blur movement, or add noise to images. This wheel shows which settings let in more light, and their negative side effects.



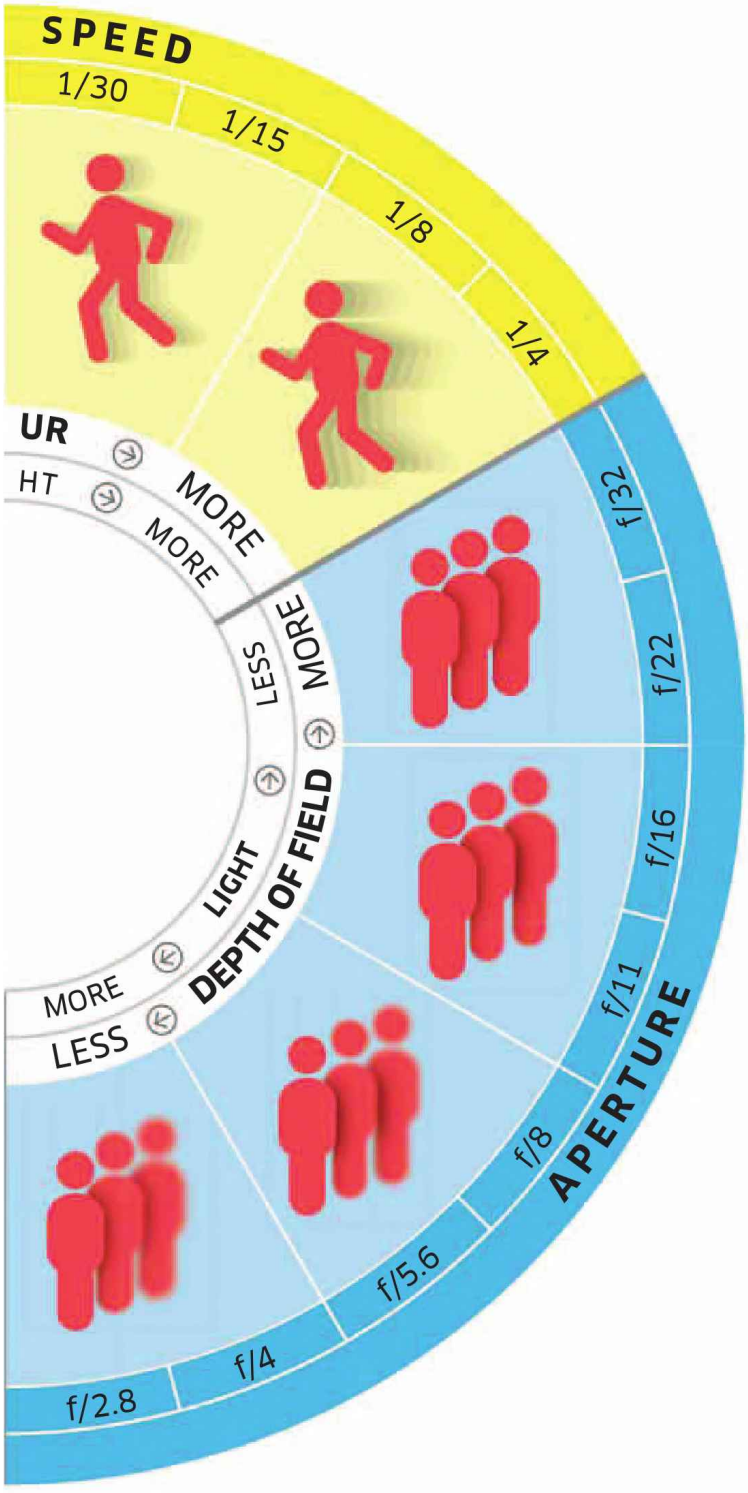
SLOW SHUTTER SPEED

- **The longer the shutter** remains open, the more light is captured.
- **Blurred movement** caused by camera shake can occur at low shutter speeds. The longer the focal length of a lens, the greater the risk of camera shake.
- **Using a tripod** or modern lenses with image stabilization can counteract camera shake at slower shutter speeds.

INCREASE ISO

- **At higher ISO numbers,** your camera's sensor is much more sensitive to light. The ideal ISO range for low light is 800–6400.
- **Some cameras** reach far higher numbers, but, as the wheel shows, at this point digital background noise can start to become a serious issue.
- **Post-production** methods allow you to filter out excess digital noise generated by a high ISO (see pp.86–87). Shooting in RAW allows for the most flexibility when improving images.
- **Extra noise** can improve the shot. The appearance of grain can add a softness to portraits, or a grittiness that can be effective in black-and-white images.

> Photographers deal with things which are **continually vanishing.**
>
> HENRI CARTIER-BRESSON



AVOID DIRECT FLASH

Direct flash can flatten out digital images or distract your subject, ruining the moment. But there are plenty of other ways to take advantage of low-light conditions to create striking images.

- **Slow-sync mode** enables you to fire the flash at a lower shutter speed. This enables you to fully illuminate your subject, while the slow shutter speed records more background detail.

- **Use flash off-camera** and angle light so that it is not directly in front of the subject. Use reflective surfaces and diffusers to soften the light and avoid startling people.

- **Supplement ambient light** with strategically placed constant light (such as tungsten lamps with soft white bulbs). These provide additional illumination without sacrificing the atmosphere.

USE A LARGER APERTURE

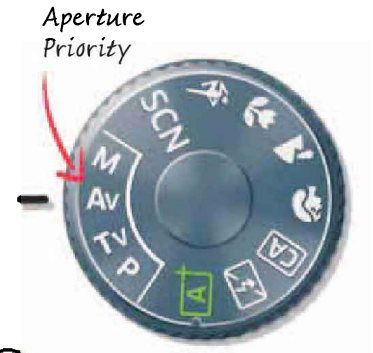
- **At larger apertures,** more light can enter the lens. Shooting at f/5.6 lets in far more light than shooting at f/18 (remember, the lower the number, the larger the aperture).
- **When shooting** with a wider aperture, however, you will have less depth of field and your focusing therefore needs to be very accurate.

Using a wider aperture

Choosing a wider aperture will allow you to keep shooting as the light begins to fade. But remember, the larger the aperture, the more your depth of field is reduced, so you will have to be more accurate with your focusing.

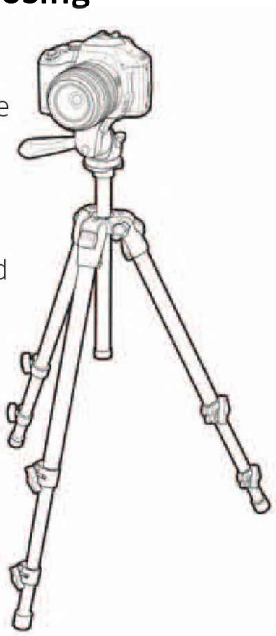
1 Set the mode

Choose Aperture Priority mode, which will allow you to control the depth of field of your shot. The camera will take care of the shutter speed, freeing you up to concentrate on getting the focusing and composition right.



2 Consider using a tripod

Use a tripod to ensure that the camera is steady and the image isn't affected by camera shake. You can handhold the camera if you're shooting in a crowded place, since this will give you greater freedom of movement.

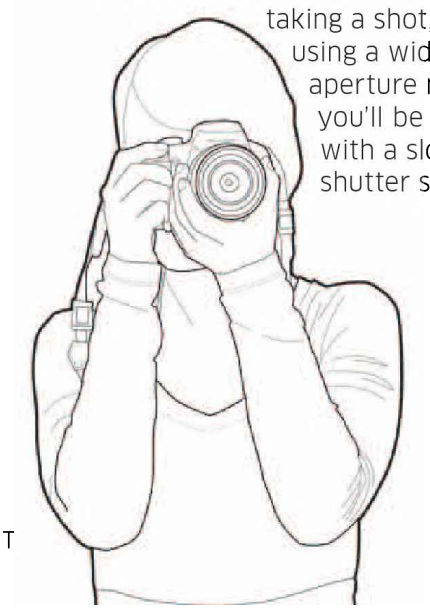


6 Compose and shoot

Arrange your composition carefully, and then, if using a tripod, use a remote shutter release (or cable release) to take a shot.

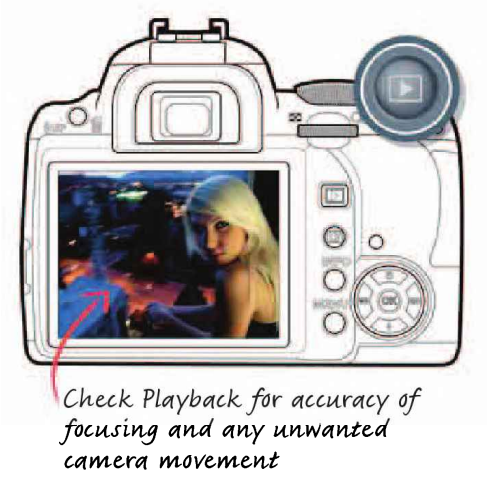
7 Hold the camera steady

If you're handholding your camera, be sure to hold it steady, or rest it on something, when taking a shot, since using a wide aperture means you'll be shooting with a slow shutter speed.



8 Review your image

With a wide aperture, it's important to get the point of focus right. If it's a little bit off, refocus, recompose your shot, and try again.

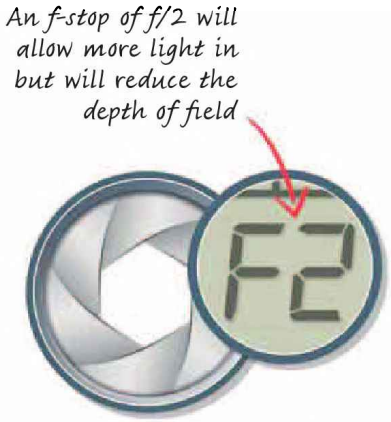


Where to start: Choose a location with low, moving, or scattered lighting and a subject that will stand out from the background. Taking a portrait of someone in a moodily lit bar would be a good choice.

You will learn: How to alter the camera's aperture to take advantage of shooting in low-light conditions, and how important it is to focus and meter correctly in order to get the best results.

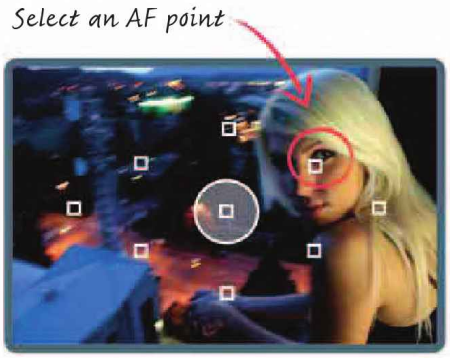
3 Adjust the aperture setting of your lens

Pick your smallest f-stop number, which will give you the widest possible aperture.



4 Focus on your subject

With a wide aperture, the depth of field is reduced, so accurate focusing becomes critical. If photographing a person, manually focus, or select an AF point, on the eye closest to you.



5 Take a meter reading of the subject

Select a metering mode, and meter the area that is most critical to your image—in other words, the main point of focus. For this image, it would be the subject's skin tone.


This shot has isolated the subject from the background, but has also kept the mood of the location.

WHAT HAVE YOU LEARNED?

- It's possible to take good photos even in low light.
- By using a wide aperture, you can continue shooting without using flash.
- However, the wider the aperture, the more the other factors, such as focusing and metering, become important.
- Working in low light will help to improve your camera handling and focusing skills.

Using constant light

A single, strategically placed constant light source (such as a lamp with a soft white incandescent, or tungsten, bulb) is excellent for providing additional ambient light in a low-lit scene without sacrificing the atmosphere of the setting.

1 Choose your shooting mode

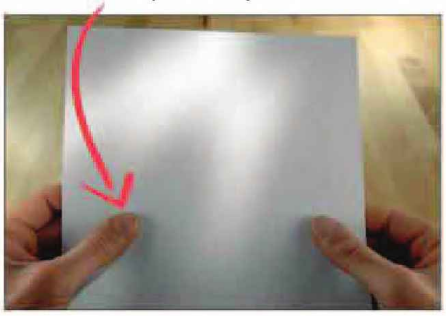
Since you're going to be shooting in a relatively dark setting, select Aperture Priority. This will allow you to choose the aperture while the camera controls the shutter speed. Pick your camera's widest aperture.

2 Set your ISO

Because of the low-light conditions, you need to increase the camera's sensitivity to light. Try turning the ISO up to 1600 for this exercise. Once the camera is set up, get your model into position.

6 Recompose your shot

You will probably have had to move your camera to check your focus and exposure, so take some time to recompose your image so it is balanced.

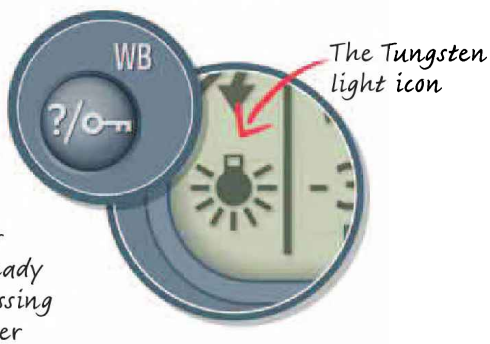


7 Shoot the picture

Although you can shoot handheld, in some circumstances it may be necessary to use a tripod or to brace the camera against something solid to keep it steady. The high ISO setting can lead to blurry images, particularly if there's any camera shake.

8 Review and reshoot

When your light source is a desk lamp, you may find that the color of your pictures becomes quite red or orange. To combat this, you may need to adjust the white balance setting from AWB or Daylight to Tungsten (the little white bulb icon), which will add more blue to the image.



Where to start: This is a good technique to try around the home or in an office where computers, lamps, and televisions offer a wide choice of light sources. By carefully metering your subject's face, you can get some wonderfully atmospheric results.

You will learn: How experimenting with aperture, ISO, and constant light sources can result in some effective low-light shots, and how altering the position of the light source can greatly affect the mood of your image.

3 Position your lights

Move a desk lamp (or other gentle light source, such as a tablet computer) so that its light falls on your subject in a flattering way. Experiment by moving the light side to side and up and down.

Tablet computers offer a nice, soft light

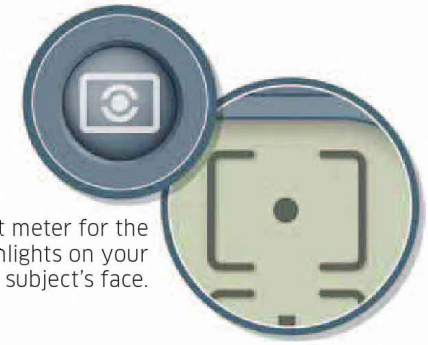
4 Focus on your subject

Because you are using a wide aperture, the depth of field in your image will be very small. Accurate focusing is therefore essential. Make sure the features of your subject are sharp.

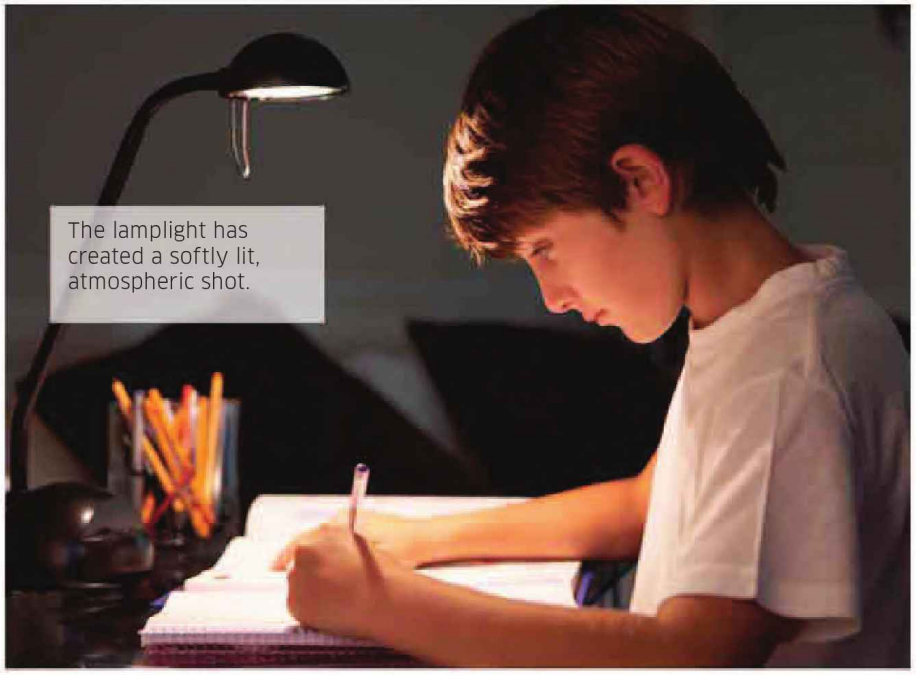
Focus on the most important feature, such as the face

5 Check the exposure

Use Spot metering, as this will allow you to precisely meter the area you have focused on while ignoring the dark shadowy areas. Center-weighted or Evaluative (Matrix) metering will be fooled by the darkness around your subject.



Spot meter for the highlights on your subject's face.



The lamplight has created a softly lit, atmospheric shot.

WHAT HAVE YOU LEARNED?

- You don't need fancy equipment for high-end results—you can use everyday items as light sources.
- Getting your subject to interact with the light sources, such as by holding a tablet computer, can result in interesting compositions.
- Achieving the best shots requires careful control of the aperture and ISO settings.
- You can use your camera's white balance setting to add more blue to an image.

PRACTICE AND EXPERIMENT

Shooting in low light

These three assignments will help you hone your skills in low light. They are simple in theory but will take a little time and patience to get the best results. As with anything in life, the only way to learn is by practicing and making mistakes.

CREATE LIGHT TRAILS

EASY
1 HOUR
BASIC + tripod
OUTDOORS
AN URBAN LOCATION WITH MOVING LIGHTS

Using a tripod to keep your camera still, slow your shutter speed down to capture streaming light trails in your town or city at night.

- **Find** a position with a good view down a busy street, or perhaps on a bridge over a freeway, once the sun has set.
- **Attach** your camera to a tripod.
- **Pick** a low ISO—around 200—and set your camera to Shutter Priority. Dial in the slowest shutter speed your camera can achieve. On most models, this is around 30 seconds.
- **Press** the shutter button to take a shot, then bring the shutter speed up and take another. Repeat. Note how the light trails get longer, and the slower your shutter speed, the less detail is recorded.

TAKE A DIM VIEW

EASY
30 MINUTES
BASIC + tripod
INDOORS
A LOW-LIT BUILDING

Increasing your ISO makes your camera more sensitive to light, allowing you to take images inside a dimly lit building without using a flash.

- **Take** a series of pictures from the same position, turning the ISO up each time until you reach the maximum setting.
- **Observe** that, as the ISO increases, so does the amount of noise, making the picture appear grainy.
- **Experiment** until you find the perfect ISO setting. This will be a bit lower if shooting with a tripod than without one.

A church is a perfect location for this exercise.

Pro tip: Although these assignments are primarily about experimenting with capturing light, don't forget the composition of your shots. Learning to see and compose images in any conditions—especially in low light—is one of the keys to great photography.

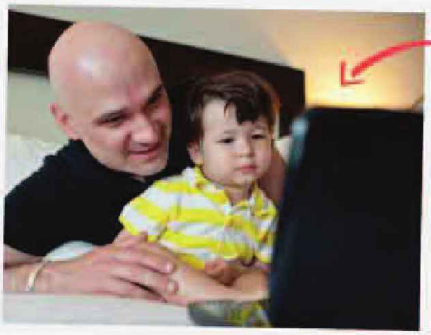
In this image you can see the lights but not the vehicles that created them.

LIGHT SOURCES

EASY
1 HOUR
BASIC
INDOORS
MODEL AND A CONSTANT LIGHT SOURCE

Gather together as many different light sources as you can, including angle lights, desk lamps, and tablet computers, to illuminate your subject.

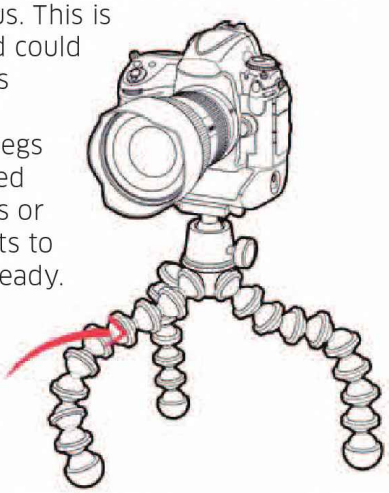
- **Open** your aperture to its widest setting
- **Take** a series of shots using each of the light sources in turn and compare the results.
- **Note** how a desk lamp creates harsh shadows while a computer screen gives a gentle glow. Also check differences in colors. For instance, a candle gives a warm-looking light while light from a tablet computer will seem white in comparison.



Soft, even lighting from the computer has enhanced this portrait

GEAR: GORILLA POD

Sometimes it's not possible to use a tripod to steady your camera when shooting in low light. The scene may be too crowded or your vantage point too precarious. This is where a gorilla pod could come in handy: it is a small tripod with flexible, bendable legs that can be balanced on uneven surfaces or used to grab objects to hold the camera steady.



The pod's legs can grab tree branches, poles, and railings

WHAT HAVE YOU LEARNED?

- Shooting in low light without flash offers a range of new photographic challenges.
- It's possible to use readily available light sources, such as desk lamps, computer screens, or car lights, creatively.
- You can turn the ISO up to increase your camera's sensitivity to light.

ASSESS YOUR RESULTS

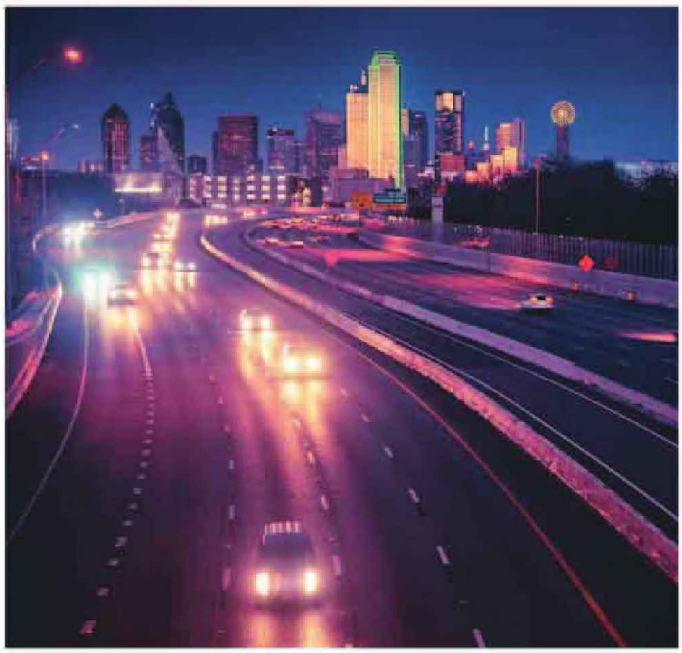
Reviewing your shots

Once you've spent some time exploring the possibilities of low-light shooting, gather together some of your best shots. Look at them again with a critical eye and consult the following checklist to see if there are any skills or techniques you need to work on.

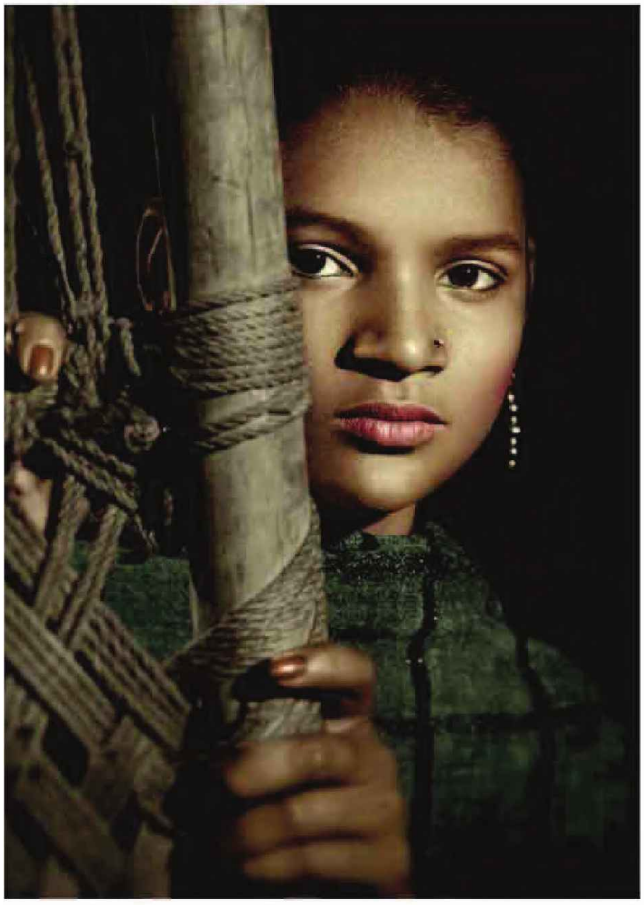
Have you positioned your light source correctly?
Here, the constant light source has been placed in the optimum position, creating an image with a lot of atmosphere. The small aperture has kept everything in the scene in focus.

Is the exposure too long?
This shot of a Ferris wheel was taken using a slow shutter speed. It has created a striking image, but a higher shutter speed might have brought out more detail.

Is the exposure long enough?
To get a shot of long, streaking car lights, you need to use a long exposure. The idea behind this image was good, but the exposure wasn't long enough to make it work properly.



> Photography's primary **raw materials** are **light and time.**
>
> JOHN BERGER



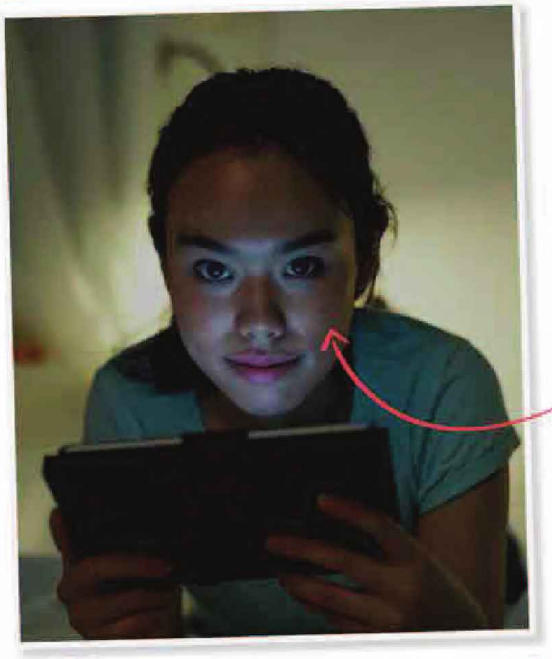
Is the ISO high enough?
A flash can kill the mood of a scene. This image was made using a high ISO to make full use of the available light and create a natural-looking portrait.

Is your image correctly exposed?
The combination of a small aperture and a high shutter speed has resulted in this dark image of a cat. Would the image work as well with a brighter exposure?

Was the camera shaking when you took the shot?
Here, the combination of low light, a slow shutter speed, and excessive camera shake have resulted in an abstract-looking image where it's difficult to tell exactly what's going on.

Did you use a tripod?
Taken by a camera mounted on a tripod, this image has captured the intertwining light patterns created by the traffic while keeping the buildings in focus.

Lightening key areas



If parts of your image are too dark, it's a straightforward task to lighten them on the computer so as to draw attention to key features, while leaving the other areas as they are.

The girl's face needs lightening to bring out the illumination from the tablet computer

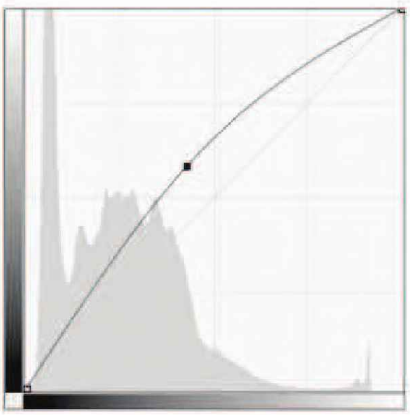
1 Select the Lasso tool

Open the image you want to work on in Photoshop, assess which areas you think need to be lightened, and then select the Lasso tool in the tool bar.

Select the standard Lasso tool, not the Polygonal or Magnetic Lasso tools

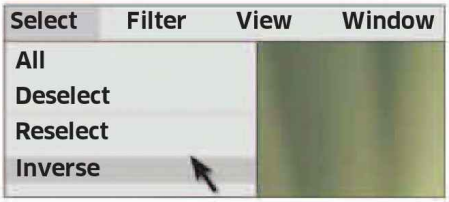
5 Adjust Curves

Click and hold the diagonal line and drag it slowly upward. As you do, the selected part of your image should begin to lighten subtly. Click OK when you are happy with the effect.



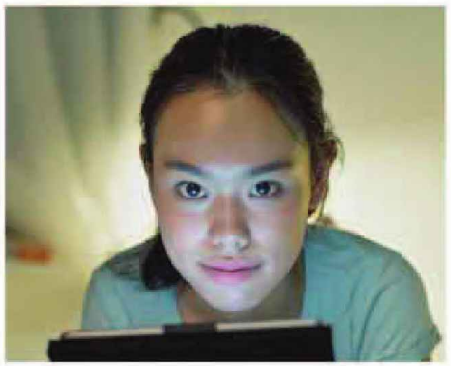
6 Invert the selection

If you need to balance the lighting of the background with your subject, choose Select in the menu bar, then Inverse. Then choose Image, Adjustments, and Exposure. Use the slider to bring the exposure of the background up or down until you get the desired balance.



7 Check the image

Use Cmd D or Cntrl D to deselect the lassoed area. Carefully look over the image. If it's still not quite right, redo the steps, adding more or less exposure until your image has the right level of contrast.

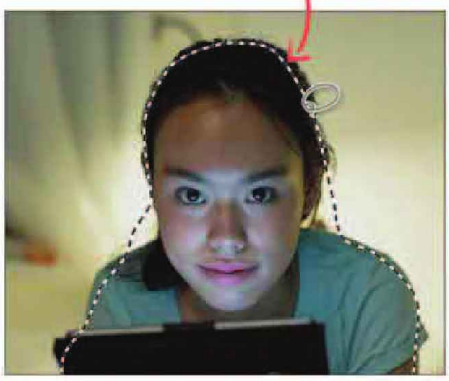


Pro tip: You can add emphasis to an image by adding a vignette to the edges to subtly darken the corners. This will draw the viewer's attention to your main subject. Don't be too heavy-handed, though, or the image will no longer look natural.

2 Draw around the area

Use the Lasso tool to draw a rough line around the area you want to lighten.

The line doesn't have to be very accurate



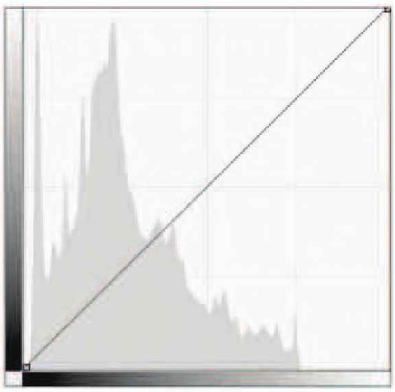
3 Select the Feather tolerance

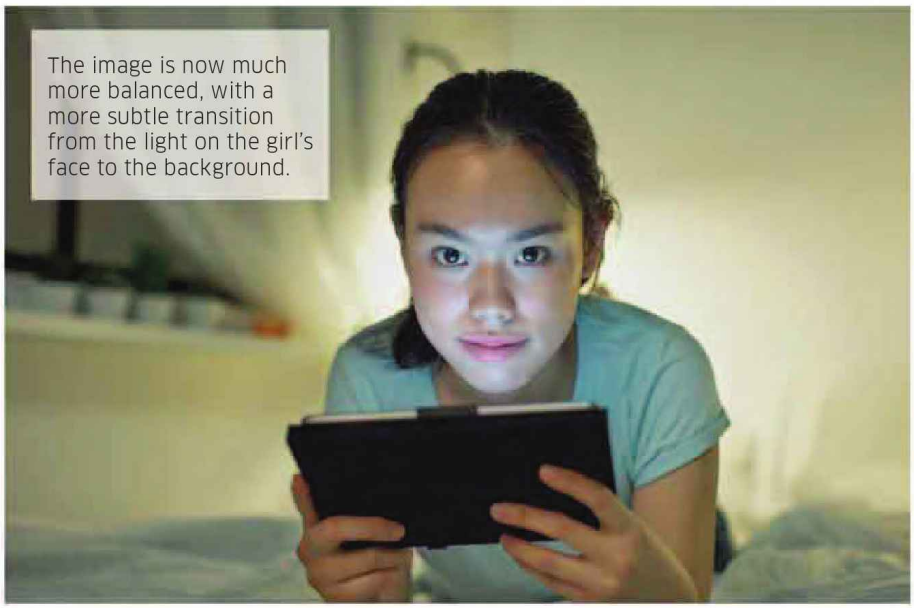
Use the Feather box at the top of the screen in order to soften the edges of your selection, so it doesn't look like the effect has been added in afterward.

A feather tolerance of about 80 will make the light appear soft

4 Open Curves

In the menu bar, choose Image, then Adjustments, then Curves. A window will appear with a mountain-like histogram showing the brightness of your image.





WARMING UP

You could go even further than the changes described here and exaggerate the lighting by warming up areas of the image. To experiment, go to the top menu, then Adjustments, then Color Balance, and play around with the sliders.

Remember that you can also alter the exposure in-camera when taking a photo—thus forgoing the need for post-production fixes—by carefully adjusting the exposure compensation.