

09

Week

TELEPHOTO LENSES

Telephoto lenses have many uses. They allow you to photograph distant subjects and they can also be used to fill the frame with your subject or compose tightly on a small detail. Telephoto lenses also appear to restrict depth of field; with careful focusing you can use this creatively to isolate your subject from the background or even its immediate foreground. Finally, telephoto lenses compress distance, bringing the elements in a shot closer together.

In this module, you will:

- ▶ **see how a telephoto lens** can be used in a surprising number of situations, from capturing close-ups to far-off details;
- ▶ **learn how** telephoto lenses work and how their particular characteristics can be used creatively;
- ▶ **apply your new knowledge** by following a step-by-step photoshoot of a wildlife subject;
- ▶ **experiment with using telephoto lenses** for portraits and distant subjects;
- ▶ **review your photos** to see if you've used your telephoto lens to its full effect;
- ▶ **enhance a landscape shot** by shooting and stitching together an impressive panorama;
- ▶ **test how much you've learned** about telephoto lenses and see if you're ready to move on.

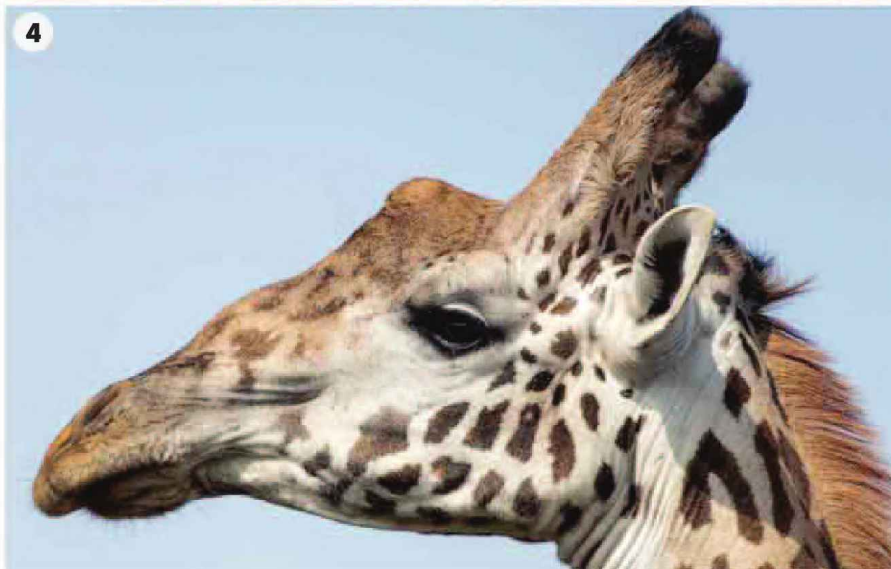
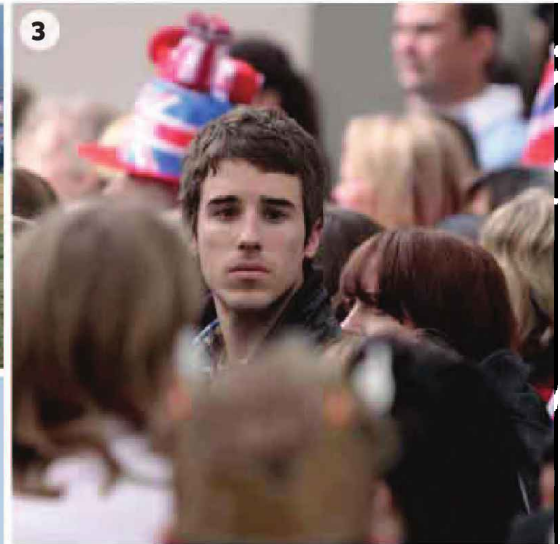
Let's begin...





▶ TEST YOUR KNOWLEDGE

Assessing telephoto shots



A telephoto lens is a lens with a long focal length resulting in a very narrow angle of view. Telephoto lenses also magnify the image captured by the sensor. This means that distant objects appear larger in the frame compared to a wide-angle or standard lens.

A Wildlife: A telephoto lens is ideal for photographing animals without disturbing them.

B Sports: A telephoto zoom is perfect for fast-moving sports.

C Stage shots: You can capture the energy of a concert by taking close-up shots of the musicians.

D Portraits: A short focal length telephoto minimizes distortion and gives a flattering perspective.

E Candid shots: Telephoto zooms can pick out faces in a crowd.

F Close-ups: Restricting depth of field means that you can make your subject the only sharp part of the photo.

G Landscapes: The compression of space offered by a telephoto lens can be used to flatten the various layers in a landscape, highlighting visual contrast rather than depth.

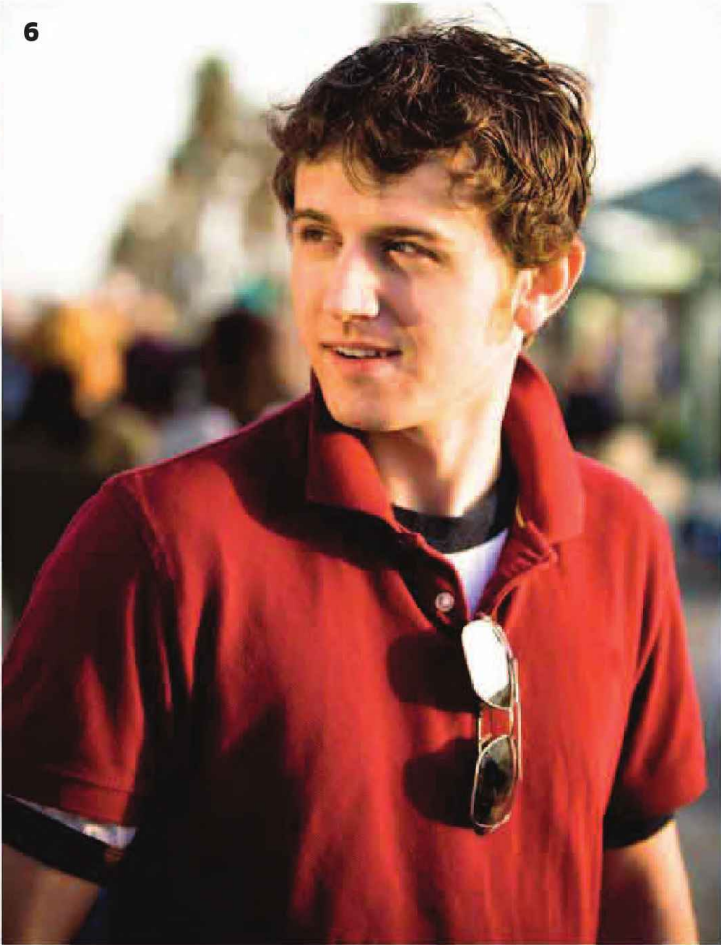
H Patterns: Abstract images of your chosen subject can be made by isolating interesting details.

ANSWERS

- E/3: A face in the crowd, London
- F/1: A used match
- G/8: Svarfisen glacier, Norway
- H/5: Detail of a door and rusty hinge

- A/4: Close-up of a giraffe
- B/2: A motorcycle race
- C/7: Close-up of a lead guitarist
- D/6: Portrait of a young man

6



7



8



NEED TO KNOW

- A telephoto is generally used to describe any lens with focal length of more than 85 mm, which is called a short telephoto; anything over 300mm is called a long telephoto.
- Telephoto optics require a lot of glass in their construction, which can make these lenses noticeably heavier than wide-angle or standard lenses, and more expensive.

- The depth of field is more restricted than in standard or wide-angle shots, which means that focusing needs to be very precise when using a telephoto lens.
- “Fast” telephotos—those with very large maximum apertures—are typically used for sports or wildlife photography. The large maximum aperture allows the use of fast shutter speeds.



Review these points and see how they relate to the photos in this module



► UNDERSTAND THE THEORY

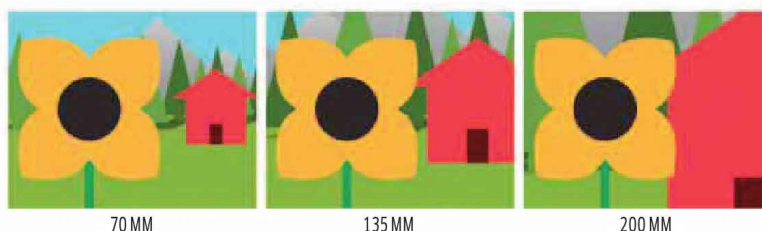
Telephoto perspectives

Telephoto lenses have two important characteristics. The first is that they have a narrow field of view. This means that only a very restricted area of a scene is captured. The second is that the image projected onto the camera's sensor is magnified. Practically, this means that distant objects are larger in a photo than they would appear to the eye; the longer the focal length of the lens, the greater this magnification.



PERSPECTIVE

Telephoto lenses appear to flatten perspective. This is due not to the lens itself, but to where it forces you to stand in relation to your subject: using a telephoto lens means being relatively distant from your subject. This increases the camera's relative distance to the subject compared to the distance between the subject and other elements in a scene.

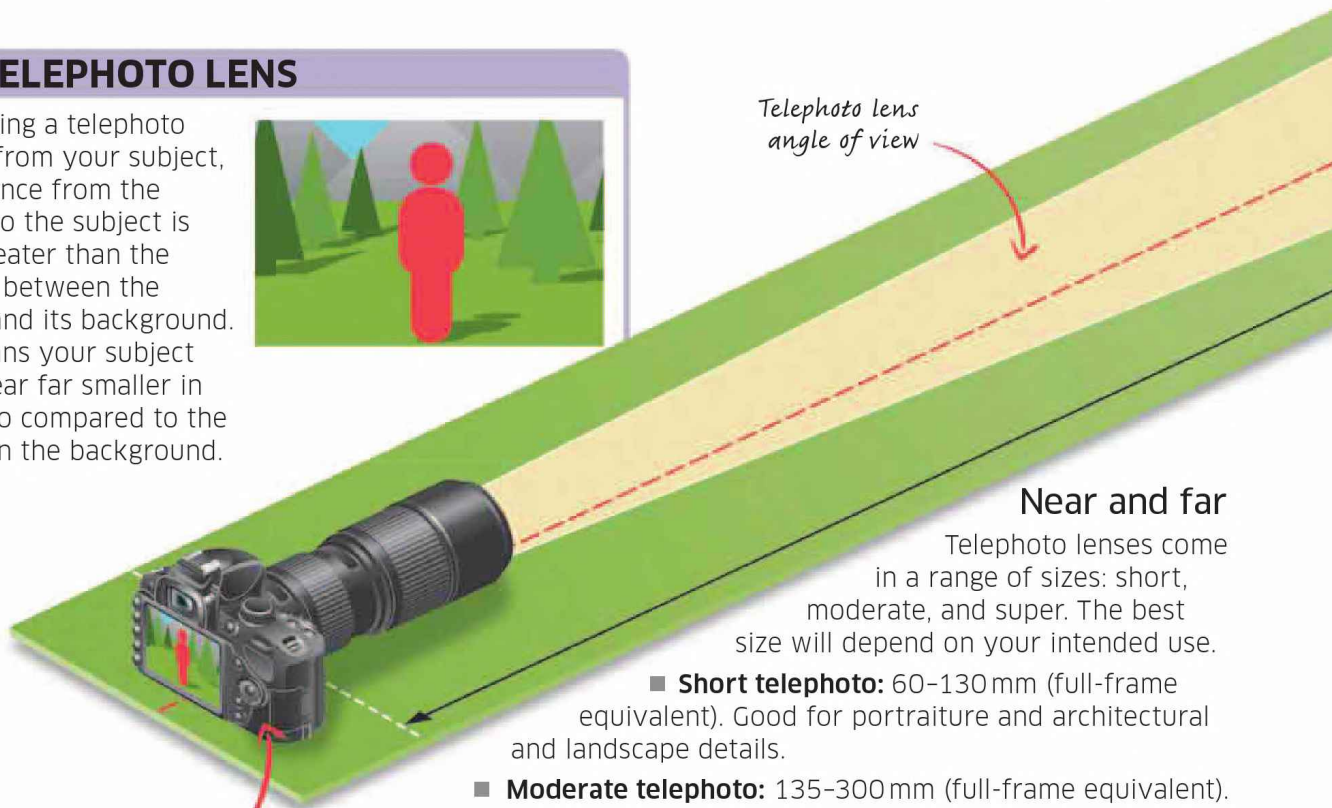


TELEPHOTO LENS

When using a telephoto lens far from your subject, the distance from the camera to the subject is much greater than the distance between the subject and its background. This means your subject will appear far smaller in the photo compared to the objects in the background.



Camera with telephoto lens



Telephoto lens angle of view

Near and far

Telephoto lenses come in a range of sizes: short, moderate, and super. The best size will depend on your intended use.

- **Short telephoto:** 60–130 mm (full-frame equivalent). Good for portraiture and architectural and landscape details.
- **Moderate telephoto:** 135–300 mm (full-frame equivalent). Ideal for sports/action, wildlife, and street photography.
- **Super telephoto:** +300 mm (full-frame equivalent). Useful for distant wildlife and astronomical photography.

Pro tip: Lens-based image stabilization should only be used when handholding a camera. When using a tripod, turn image stabilization off. For increased stability, support a telephoto lens with your left hand closer to the end of the lens than the camera body.

Pro tip: Telephoto lenses give a restricted depth of field. The longer the focal length of the lens, the harder it is to keep everything sharp. This can be used creatively to selectively blur the background behind, or a foreground in front of, a subject in focus.



STANDARD LENS



Using a standard lens produces a wider angle of view than that produced by a telephoto lens.

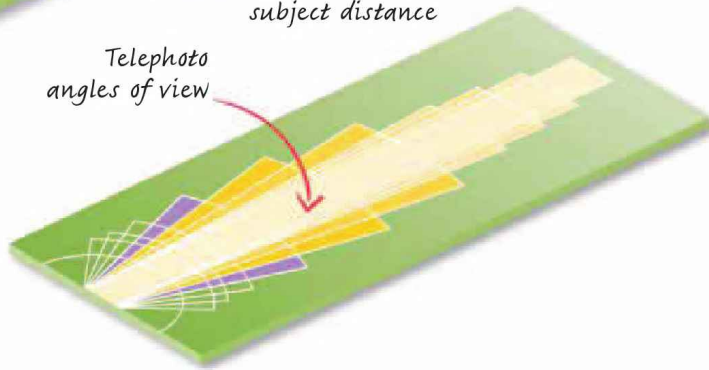
Standard lens
angle of view



Camera with
standard lens

Camera to
subject distance

Telephoto
angles of view



How long is long?

Telephoto lenses are often referred to as long lenses due to their physical size. A lens is considered to be a “long” lens when its focal length is greater than the diagonal measurement of the sensor. On a full-frame camera (see p.127) this makes any lens with a focal length greater than 60mm a “long,” or telephoto, lens.

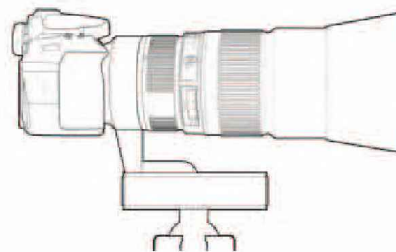


AVOIDING CAMERA SHAKE

Telephoto lenses are heavy and often cumbersome, and, as they magnify an image, the effects of any movement are also exaggerated. Using a shutter speed that is faster than the focal length of the lens will help—set 1/500sec for a 400mm lens, for example—or use one of the accessories below.

■ **Monopods**, although less stable than tripods, they are a good compromise between keeping a camera mobile and keeping it steady.

■ **Lens-based image stabilization systems** compensate for slight movements during exposure. The system takes a second or so to begin working effectively so cannot be used instantly.



Tripod collar

The weight of a telephoto can tip a camera forward. A tripod collar helps to make the camera more stable.



▶ LEARN THE SKILLS

Photographing wild animals



Wild animals are generally difficult to get close to. This means that telephoto lenses are often necessary to ensure that an animal is a reasonable size in the image frame. Even in a controlled environment, such as a zoo, a telephoto lens is invaluable and will allow you to crop out clutter and simplify backgrounds with the use of large apertures.

Ring-tailed lemurs are social animals that are found in many zoos.



1 Assess your location

Creating a satisfying portrait of wild animals means taking care not to include artificial elements in the shot. Take time to wander around to find the most eye-catching but natural-looking backdrop for your shot.



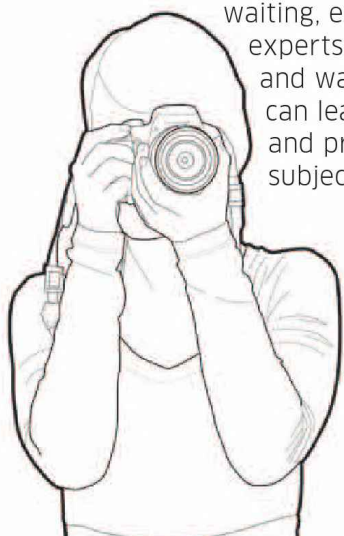
2 Use Aperture Priority and set aperture

Set the camera to Aperture Priority so that you can use the aperture settings to control depth of field. Use maximum aperture initially, but experiment with smaller apertures too.



6 Be patient

Knowledge of animal behavior is useful for predicting what an animal will do over the course of a day. However, photographing animals often involves lengthy periods of waiting, even for experts. Watch and wait, so you can learn to spot and predict your subject's traits.



7 Photograph the animal

Shoot when the animal displays intriguing behavior, such as looking directly at the camera. Avoid rushing your shots; stay calm and gently press down on the shutter button to reduce the risk of camera shake.



8 Check your photos

Review your photos for sharpness and exposure. Continue to shoot if you feel that your technique isn't quite right. Keep your "failures": sometimes shots that don't seem right at the time display interesting qualities that aren't immediately apparent.

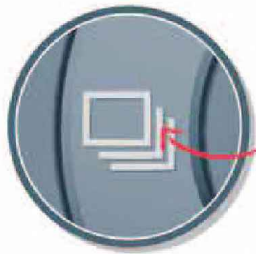


Where to start: Photograph an animal in a park or zoo and create an authentic-looking photo.

What you will learn: How to shoot successful animal portraits using a telephoto lens by preparing to shoot and waiting for natural behavior.

3 Select Continuous Drive mode

An animal can't be directed in the way that a person can. Selecting Continuous Drive mode means that you can fire off several shots in rapid succession and capture the animal's behavior.



Continuous drive lets you take a series of shots with a single press of the shutter button

4 Check exposure

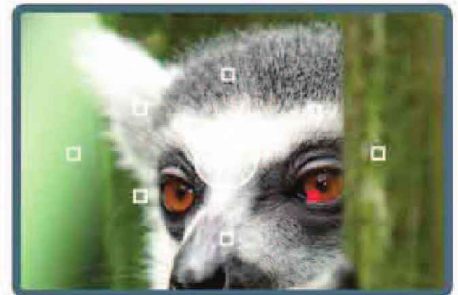
Press halfway down on the shutter button to activate the camera metering. Check that the shutter speed is fast enough to avoid camera shake—telephoto lenses require the use of faster shutter speeds when the camera is handheld than wide-angle lenses. Increase ISO if necessary.



Start off with a low ISO, such as ISO 100

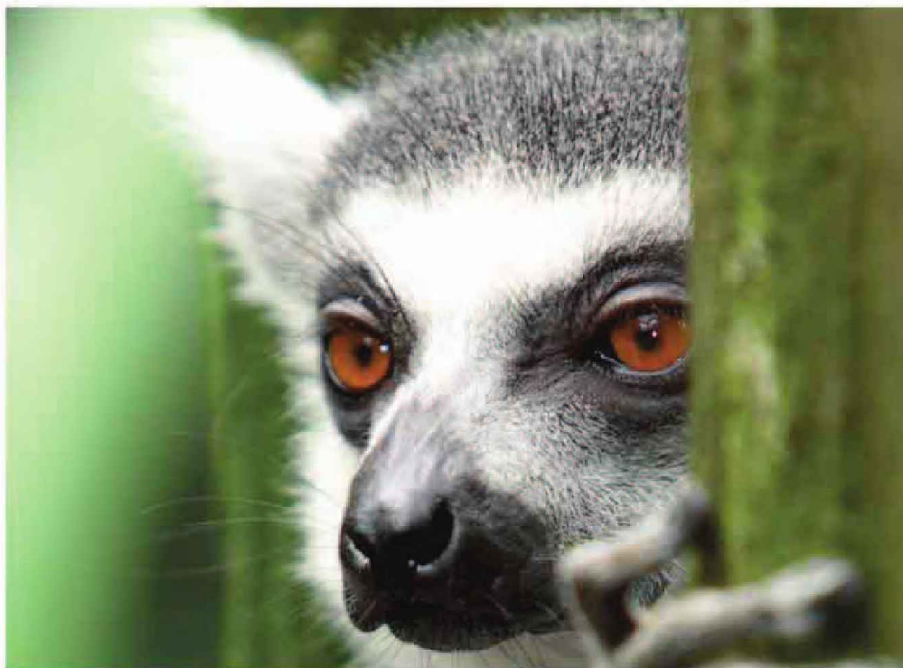
5 Focus on the subject

The longer the focal length of a telephoto lens, the more restricted depth of field will be at a given aperture. Focusing therefore needs to be precise. Focus on the animal's eye by using Manual AF point selection to select the AF point closest to the eye.



WHAT HAVE YOU LEARNED?

- Learning to anticipate is the key to photographing animals successfully.
- Another factor necessary for success is preparation. As such, it's important to set the required camera functions before shooting.
- It also requires familiarity with your camera equipment. This means that you can change camera functions instinctively so that great opportunities aren't missed.





▶ PRACTICE AND EXPERIMENT

Using a telephoto lens

The ability to visualize the options that telephoto lenses provide may not come easily at first. However, when you begin to understand their unique characteristics—particularly perspective compression and restricted depth of field—a new way of seeing the world photographically will be revealed. One way to practice is to form a rectangular frame with your thumbs and forefingers. Look through this frame, held at arm's length, to see how a telephoto can be used to frame shots.




TELEPHOTO PORTRAITS

 **EASY**

 **INDOORS**

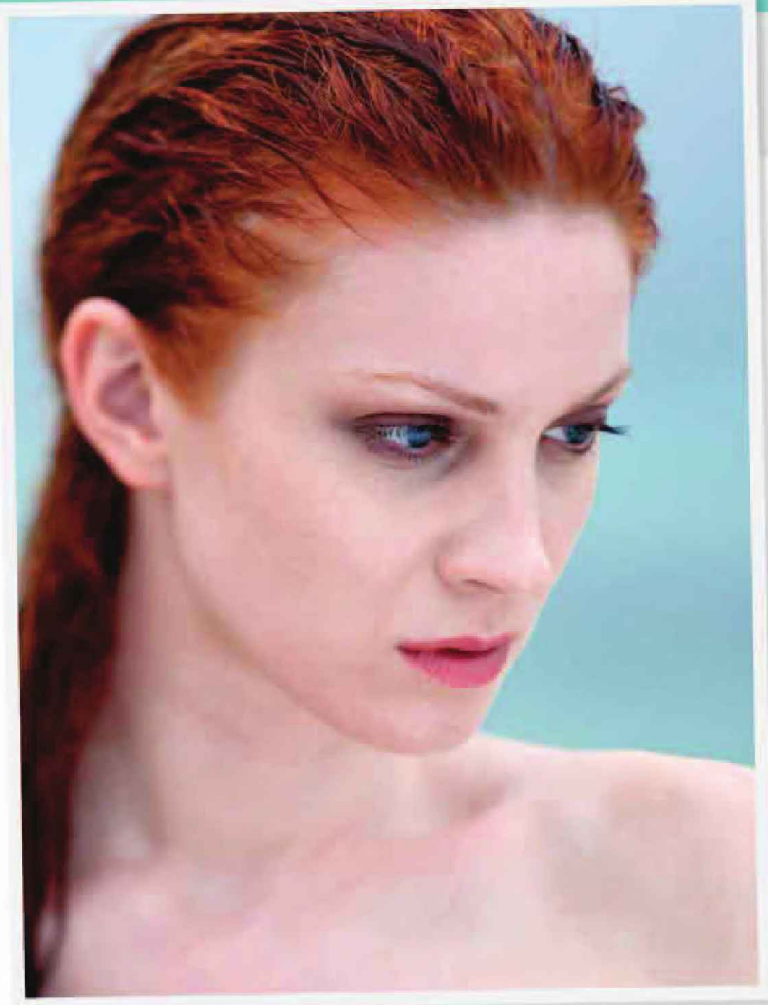
 **1 HOUR**

 **A MODEL**

 **BASIC** + telephoto lens

A short focal length telephoto is a great lens for shooting head-and-shoulder portraits. Since you need to work at some distance from your subject, the resulting perspective is more natural and flattering.

- **Ask** your model to find a comfortable pose. Orient your camera horizontally and position it so that you frame the model at the left side of the composition.
- **Set** the exposure mode to Aperture Priority and select the lens's largest aperture.
- **Focus** on your model's eyes. Shoot several frames, and ask your model to change the direction of their gaze and the angle of their head between shots.
- **Repeat** with your model on the right side of the Viewfinder.
- **Review** your photos to see which of your model's poses are the most attractive.



Try experimenting with different aperture settings and other poses.

Pro tip: A tripod is invariably needed when using a telephoto to shoot landscapes. The need for a small aperture to increase depth of field means that shutter speeds may be lengthy.



TELEPHOTO LANDSCAPES

EASY

OUTDOORS

2 HOURS

SCENIC VENUE

BASIC + telephoto lens, tripod



Very cool blue aerial perspective is seen 10 to 20 minutes before the sun rises or after it has set.

Telephoto lenses aren't traditionally seen as lenses useful for landscape photography. However, they are perfect for picking out distant details. They are also excellent for emphasizing aerial perspective—the way that tones in a landscape soften and turn more blue the farther away they are.

■ **Shoot** from high vantage points across a landscape of rolling hills to make the most of the conditions. Aerial perspective is seen most readily on hazy or misty days.

■ **Work** at either end of the day when shadows are at their longest. This helps define the shape of landscape details.

■ **Vary** how you orient the camera. As well as capturing wide panoramas, shoot vertically to emphasize the height of subjects such as trees.



TAKING CANDID SHOTS

EASY

OUTDOORS

2 HOURS

BUSY SCENE WITH PEOPLE

BASIC + telephoto lens

Candid photography means photographing people when they are unaware of you and are acting naturally.

■ **Spend** time watching people before shooting.

■ **Look** for people who are more extroverted in how they react or move. Photos of people showing extreme or exaggerated reactions are always more arresting.

■ **Try** using different focal lengths if you're using a telephoto zoom to frame groups of people as well as individuals.

Zoom back to fit in extravagant gestures such as a crowd of people throwing their hands in the air



WHAT HAVE YOU LEARNED?

- The eyes of a subject should be the sharpest part of the photo.
- Candid photography will produce more natural-looking shots of people.
- Telephotos are ideal for picking out details in a landscape.



SHOOT THE MOON



DIFFICULT



OUTDOORS



1 HOUR



CLOUD-FREE MOONLIT NIGHT



BASIC + telephoto lens, tripod

The moon is a challenging subject to shoot, but with a telephoto lens it's possible to produce striking photos. Popular moon phases include a full moon or a crescent, when shadows make details of craters and mountains easier to see.

- **Consult** a lunar calendar to check the phase of the moon and when it will rise. These can be found either online or with a smartphone app.
- **Work** away from street light if possible and set your camera on a tripod.
- **Use** Manual mode, set the aperture to f/11, the shutter speed to 1/125sec, and the ISO to 100.
- **Switch** the lens to Manual focus and focus on infinity.
- **Compose** a shot with the moon in the frame.
- **Shoot** a test shot and review it in Playback. If the moon is too bright, use a smaller aperture—or, if it is too dark, use a larger aperture.



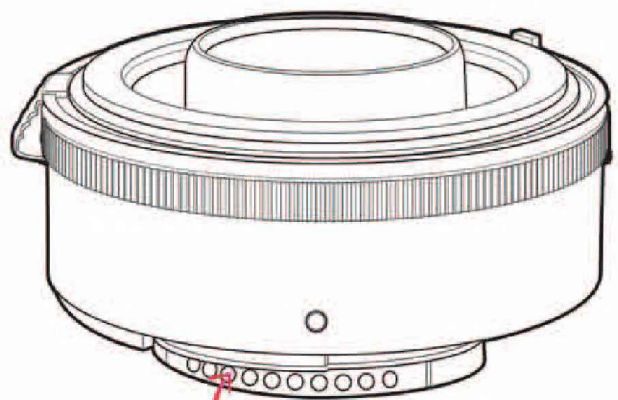
The brightest moon is a full moon.



GEAR: TELECONVERTERS

A teleconverter fits between a camera and a lens. An optical system within the teleconverter increases the focal length of a lens by a set factor (typically 1.4x, 1.7x, or 2x). Teleconverters extend the reach of your telephoto lenses with relatively little financial outlay. That said, not all lenses are suitable for use with a teleconverter; some lenses may even be damaged if used with one, so check the manufacturer's guidelines.

Adding a teleconverter reduces the amount of light reaching the sensor. This requires the use of either a slower shutter speed or higher ISO when shooting. One stop of light is lost when using a 1.4x converter or two stops with a 2x converter. Finally, the image quality when you use a teleconverter is lower than when using a telephoto lens on its own.



These pins carry instructions from the camera, through the teleconverter, and to the lens



USE DIFFERENTIAL FOCUS

- MEDIUM
- 1 HOUR
- BASIC + telephoto lens
- INDOORS OR OUTDOORS
- SCENE WITH OBJECTS SPACED APART

Photos don't need to be sharp from front-to-back. Differential focus is the technique of deliberately choosing which areas of a photo are sharp and which are out-of-focus. Out-of-focus areas contribute to the photo aesthetically as much as the in-focus areas.

- **Set** your camera to Aperture Priority and then select your telephoto lens's maximum aperture.
- **Walk** around your chosen scene. Focus on and then shoot the different objects within the scene. Look carefully at how the out-of-focus areas around the object either add to or detract from the photo's appeal. Focusing beyond objects, too, can increase the feeling of depth.



The pose of the out-of-focus figure can still be recognized



CREATIVE BLUR

- MEDIUM
- 1 HOUR
- BASIC + telephoto lens
- INDOORS OR OUTDOORS
- A STATIC DIMLY-LIT SCENE

A soft-focus effect can be created by slowly defocusing a lens during a long exposure. This technique is particularly well suited to telephoto lenses. Their restricted depth of field means that the lens can be defocused easily.

- **Set** your camera to Aperture Priority and the aperture to f/8. Select the lowest ISO possible.
- **Ideally** a shutter speed of one second or longer is required. Wait for the ambient light to be low enough—shoot at dusk or use an ND graduated filter (see p.99) to achieve this.
- **Set** the lens to Manual focus and focus on infinity (or your intended subject).
- **Press** the shutter button to start the exposure. Smoothly turn the focus ring away from infinity. Try to time the turn so that you reach the minimum focus distance before the exposure ends.



Lights and sharp detail are softened considerably when defocusing during exposure

WHAT HAVE YOU LEARNED?

- Shooting photos of the moon requires planning, such as finding out the phase of the moon and when and where it will rise or set.
- Out-of-focus areas can contribute to the success or otherwise of a photo.
- Lenses can be defocused during long exposures to produce a soft-focus effect.



▶ ASSESS YOUR RESULTS

Reviewing your shots

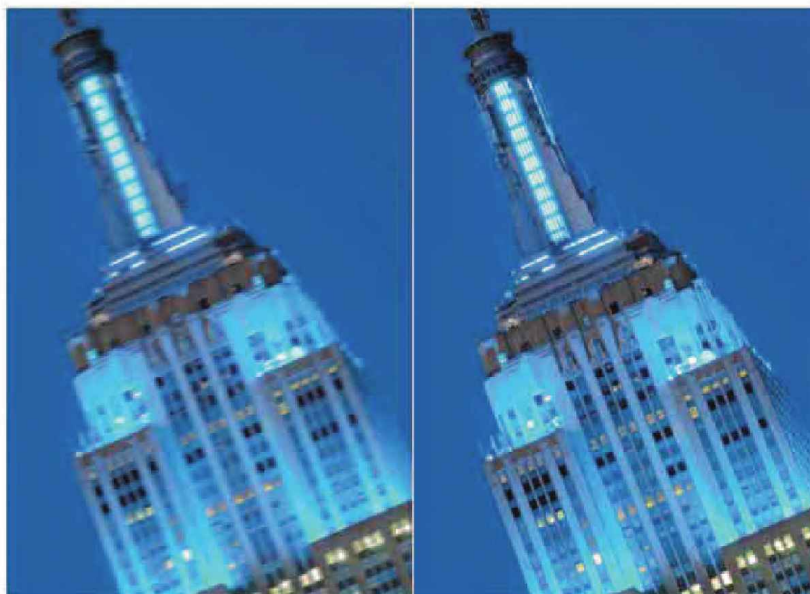
Once you've completed this module, look critically at the photos you've made. Select 10 of your more successful shots—images that work well or that you feel are almost but not quite right. Use the six pointers below to help you assess what you've done right and what you need to work on further.

▼ Did you try panning to follow the action?

Longer lenses are excellent for taking action shots. Using a slow shutter speed and panning the camera to follow the action creates a sense of speed due to motion blur.



▲ **Have you used telephoto compression well?**
Long lenses appear to reduce the distance between elements in a scene. This photo uses compression to make the buildings in the town look as if they are intimately nestled together.



◀ **Did you have camera shake?**
Using a shutter speed that is at least the equivalent of the focal length of the lens will help you reduce the risk of camera shake. Even so, how steadily you hold a camera varies from person to person—to be sure, try doubling the shutter speed relative to the focal length.

“ Look and think before opening the shutter. ”

YOUSUF KARSH

09

WEEK

Have you isolated important details?

Telephoto lenses are great for isolating dramatic details in a scene. This dynamic close-up of the muscles in a runner's leg shows the strain and effort simply but effectively.



Have you thought about depth of field?

Use the inherent shallow depth of field of longer focal length lenses to simplify shots. Here, the out-of-focus background helps to direct the viewer's eye to the spider.



Is your focusing accurate?

Depth of field is very restricted when you use telephoto lenses at large apertures. Focusing, therefore, has to be very precise and accurate. This shot benefited from using Continuous focus to track the subject as it moved.



▶ ENHANCE YOUR IMAGES

Creating a panoramic photo



Sometimes a photo doesn't convey the epic sweep of a landscape: a panoramic photo is more effective. Cropping a standard photo to create a panoramic one will drastically reduce the resolution of the image. A better solution is to shoot a sequence of overlapping photos—moving the camera from left to right as you do so—and then stitch the sequence together.



1 Shoot your sequence

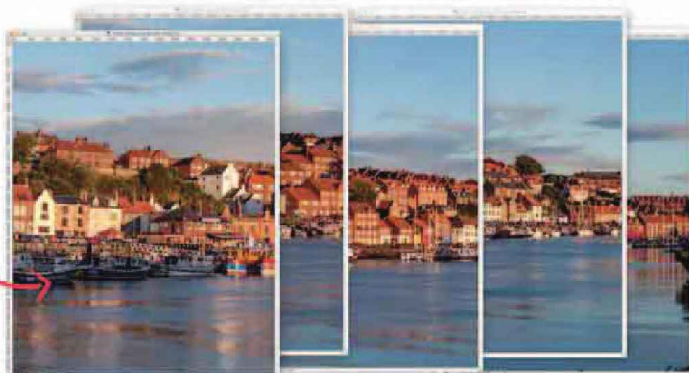
Keep your camera as level as possible as you shoot the sequence. Overlap your photos by about one-third of the frame as you shoot. Look for distinctive landmarks as reference points to help you judge the overlap.



2 Line up your photos

Open the sequence in your image-editing software. Align them roughly across the screen to ensure that the sequence covers the entire scene.

Line up the photos in the correct order



6 Create your panoramic photo

Click on OK to begin the stitching process. This can take time, particularly if you're stitching a number of high-resolution files.



7 Flatten and crop

The panoramic stitch will need a few refinements before it's finished. Flatten the layers and then crop the photo to a rectangle, removing any white border from around the photo.



8 Make your final adjustments

Check around the photo at 100 percent magnification to see if there are any stitching errors and use the Clone tool to remove them.



Stitching errors are a particular problem when shooting moving subjects such as water



Pro tip: Shoot your photos vertically to produce a sequence suitable for a horizontal panoramic image, or vice versa. This gives you more room to crop in during post-production.

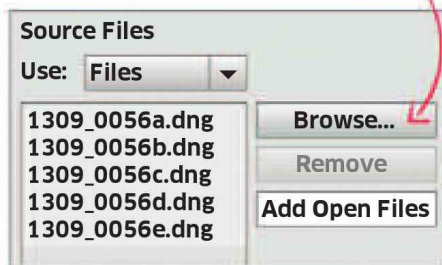
Pro tip: Keep shooting functions such as exposure, focus distance, and white balance the same for each shot in the sequence.



3 Open Photomerge

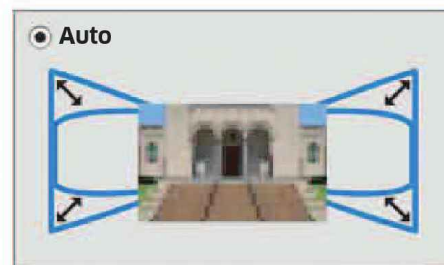
Photoshop's photo stitching tool is called Photomerge. To use the tool, go to File, Automate, and then Photomerge. Initially no photos are available for stitching. Click on Add Open Files to add your photos to Photomerge.

You can also add photos saved previously by clicking on Browse



4 Choose a stitching method

Layout selects the method used to stitch the panorama. The simplest option is Auto: this uses the most suitable Layout option according to the content of your sequence.



5 Click on Blend

Check Blend Images Together. This ensures that Photoshop will attempt to produce as seamless a panoramic stitch as possible. Leave it unchecked and you may need to adjust stitching errors by using other correction tools.

Blend Images Together

IN-CAMERA

Many cameras now offer "sweep panoramic" modes. This allows you to shoot a panoramic photo in-camera by moving the camera in a smooth arc across a scene. During the "sweep," the camera shoots multiple photos that are then stitched to produce the final panoramic image. Although "sweep panoramic" modes automate the process of creating a panoramic photo, there are drawbacks. Generally, panoramic photos are limited to certain pixel resolutions and JPEG images.

Full panorama created by stitching together five different images



Image edges have been blended together to create a seamless view of the water