

# 10



## SELF-LEARNING PACKAGE I

# ICT 10

Quarter 1 | Week 3

## Types of Camera Lenses

### Learning Competency:

Identify appropriate lens for specific needs.

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## Ready to Launch!

Module 2, familiarized you with the basic parts of a camera. You are now ready to learn the basics of camera lenses.

What is a Camera Lens? A lens is a tool used to bring light to a fixed focal point. In a film camera, the lens sends the light to the film strip, while in a digital camera (like DSLRs or mirrorless cameras), the lens directs light to a digital sensor. Camera lenses are made up of a series of glass plates that are convex (curved outward) or concave (curved inward).

This lesson guide will tell you all you need to know about the different types of camera lenses and when to use them.



## Aim at the Target!

*At the end of this module you are expected to:*

1. Identify the different types of camera lenses, its focal length and primary uses.
2. Describe the factors that determine how a camera affects the look and quality of the final photo.
3. Explain the speed of lenses.



## Try This!

**Activity 1.** Unscramble the following words and write your answer on the space provided.

WORD	CLUE	ANSWER
MOZO	Allows you to photograph wide range of subjects	
ALCOF GENHTL	The distance between the center of a lens or curved mirror and its focus.	
OOEEHPTTL	A type of lens that have long focal lengths.	
ESOLC SPU	A picture taken with the subject close to the camera.	
SEENSL	A tool used to bring light to a fixed focal point.	



## Keep This in Mind!

A camera without a lens is useless to a photographer. The lens is what focuses light from what you see through the viewfinder into a tiny, (typically) 35mm spot on the back of your film, DSLR, or mirrorless camera. If you remove the lens from your camera, the only kind of image you can produce is white light. Consequently, a high-quality lens can help you capture great photos even with a cheap camera, while a low-quality lens can make the best camera mediocre and the resulting image quality, poor.

### Activity.2 Describing pictures

Direction: Identify what kind / type of pictures are shown below.



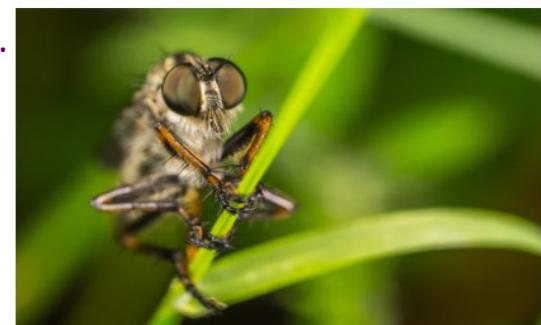
1



2



3



## Abstraction and Generalization

### Camera Lens Characteristics

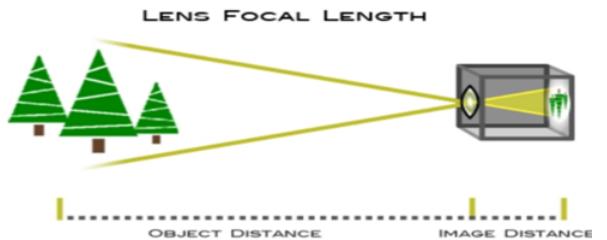
All lenses filter and focus light so that it hits the sensor or film strip correctly. However, there are a variety of other factors that determine how a camera lens affects the look and quality of the final photo.

- **Focal length**

Lens focal length tells us the **angle of view**—how much of the scene will be captured—and the **magnification**—how large individual elements will be. The longer the focal length, the narrower the angle of view and the higher the magnification. The shorter the focal length, the wider the angle of view and the lower the magnification.

- **Aperture controls the brightness of the image that passes through the lens and falls on the image sensor.**

- **Depth of Field.** the distance between the nearest and the furthest objects that give an image judged to be in focus in a camera. For example, landscapes are typically shot so that everything is in focus, so photographers will shoot at small apertures (e.g. f11 or f16). **The depth of field** varies with the type of lens, due to maximum aperture.



### Types of lenses and when to use them:

Focal Length	Type of Lens	Primary Uses
4mm - 14mm	Fisheye	Abstract, creative
14mm - 35mm	Wide angle	Landscape, architecture
35mm - 85mm	Standard	Street, travel, portrait
85mm - 135mm	Short telephoto	Portraits, street
135mm+	Medium telephoto	Sports, wildlife, action
35mm - 200mm	Macro	Close ups
Undetermined	Tilt-shift	Architecture, fine art

- **Telephoto lenses**

Telephoto lenses have long focal lengths, starting at 85mm, and allow you to photograph subjects from a distance. They are significantly heavier and bigger than other types of lenses, and more often than not require the use of camera accessories such as tripods or monopods.



- **Wide angle lenses**

Wide angle lenses are those with a short focal length, commonly ranging from 14 to 35mm. The broader field of view allows you to capture more of the scene in a single exposure. Because of this, wide angle lenses are particularly popular in **architecture and landscape photography**.

Another one of the key features of these types of camera lenses is their ability to create a large depth of field. This allows the photographer to capture shots where most of the scene is razor sharp. On the downside, the shorter the focal length is, the more distortion you'll see in your images. While you can use a free photo editing software to correct this issue, it's recommended to avoid placing elements near the frame to minimize the damage.



- **Fish eye lenses**

Fish eye lenses are ultra wide angle lenses with a focal length between 4mm to 14mm. They're most commonly used in **abstract photography**, as their unique mapping gives the image a convex appearance that distorts straight lines. The lowest focal lengths can result in circular images that provide a 180° view.



As you might've guessed, their name comes from their similarity to fish eyes. You can see in the frontal element of the lens that it bows forwards to offer a panoramic view. While the singularity of this type of camera lens makes them unsuitable for most projects, they are a wonderful tool to bring your **creative photography ideas to life**.

- **Macro lenses**

Macro lenses have a unique internal structure that allows them to capture close ups with accurate detail, sharpness, and contrast. The purpose of this type of lens is to display subjects at life size (1:1) or larger. They're primarily used to capture **beautiful nature photos**, but are also significantly popular in fields such as **product and fine art photography**. Regardless of the distance the photographer is from their subject, macro lenses do not perform well in far distances. In other words, you won't be able to get a sharp focus in a broad frame.



- **Tilt-shift lenses**

Tilt-shift lenses can be tilted and shifted to manipulate the vanishing points of the scene. This is achieved by modifying the position of the optics in relation to the camera sensor. They're used to alter perspectives and reduce lens distortion, as well as to focus selectively.

This type of lens is not commonly used by the regular public, but rather in specialized photography careers such as **architecture photography** and fine art photography.



## Other classifications

- **Prime and Zoom lenses**

Prime lenses have a fixed focal length, while zoom lenses provide a range of focal lengths you can easily change. Zoom lenses are much more flexible and allow you to photograph a wide range of subjects without having to change your gear. However, zoom lens tend to be slower and rarely match



- **Standard lenses**

These lenses offer a fairly accurate representation of what the human eye sees, both in terms of visual angle and perspective. As a result, images are perceived as more natural than those taken with other types of camera lenses.

Also known as “normal lenses,” their human-like viewpoint is especially valuable in **documentary projects such as street, portrait and travel photography**. Beyond these genres, this lens is considered a standard lens that every professional photographer must have in their equipment. Out of the many options, the 50mm prime lens, popularly referred to as “Nifty Fifty,” is the preferred gear choice among professionals and ama-

**Zoom lens**



**Prime lens**



### Speed of lenses

- The speed of a lens is actually determined by the size of the aperture. When describing lens speed on any photographic lens, it is expressed as the maximum aperture diameter - or the minimum f-number.
- A fast lens with a larger maximum aperture transmits more light to the focal plane and reaches the same exposure with a faster shutter speed compared with a slow lens with a smaller aperture. The faster the shutter speed the less blur and noise you'll achieve in the photograph, which is one of the perks of a “fast” lens.
- For example, lenses under F2.8 are considered “fast” and are usually more expensive as quality design and construction are needed to achieve larger aperture diameters, especially on zoom lenses with longer focal lengths.

## Application.

Direction: Identify what type of lens is shown in the picture below.

### Activity 3. Getting to know the lenses



### Reflect

Complete the statements below.

I understand \_\_\_\_\_

I don't understand \_\_\_\_\_

I need more information about \_\_\_\_\_



## Reinforcement & Enrichment

Activity 4. Direction: Identify what type of lens was used to capture the following pictures:

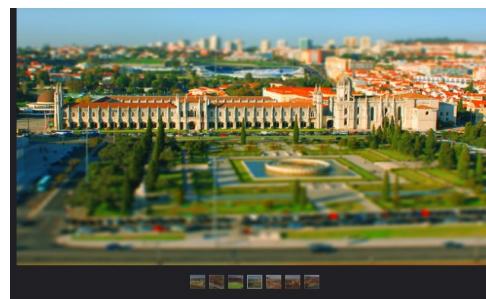
1.



2.



3.



4.



5.



## Assess Your Learning

Multiple Choice. Read each item very carefully. Select the best answer. Select the letter of your choice.

1. When shooting a street and travels, the best lens to use is \_\_\_\_\_.  
a. Zoom      c. Standard  
b. Fish eye    d. Tilt Shift
2. The focal length of a macro lens is \_\_\_\_\_.  
a. 23mm      c. 15mm  
b. 199mm     d. 35mm
3. What is the best lens to use if you want to capture fine arts and architecture?  
a. Zoom      c. Tilt Shift  
b. Fish eye    d. Standard
4. What is the focal point of a medium telephoto?  
a. 135mm     c. 131mm  
b. 129mm     d. 120mm
5. Which of the following is use for close ups photos?  
a. Macro      c. Short telephoto  
b. Tilt Shift    d. Standard
6. Which of the following is the fastest lens?  
A. f/1.4    b. f/0.8    c. f/2.8    d. f/1.8
7. The speed of a lens is determined by its \_\_\_\_\_.  
a. Shutter    b. aperture    c. image sensor    d. flash
8. What is the best focal point to use if you want to capture abstract and creative photographs?  
a. 3mm    b. 10mm    c. 15mm    d. 20mm
9. What was the lens used to capture Picture A?  
a. Telephoto    b. Tilt Shift    c. Fish eye    d. Wide angle
10. What was the lens used to capture Picture B?  
(Refer choices in No.9)



Picture A



Picture B



## References & Photo Credits

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