CHAPTER TWO - LENSES

- A LENS IS A PIECE OF TRANSPARENT GLASS WHICH CONCENTRATES OR DISPERSES LIGHT RAYS WHEN PASSED THROUGH THEM BY REFRACTION. DUE TO THE MAGNIFYING PROPERTY, LENSES ARE USED IN TELESCOPES AND OTHER MAGNIFYING DEVICES.

- THERE ARE ALL DIFFERENT TYPES OF LENSES.

MACRO LENSES

- A macro lens is a special type of camera lens that has the ability to work with very short focusing distances, taking sharp images of very small subjects. A true macro lens has a magnification ratio of 1:1 (or greater), and a minimum focus distance around 30cm

WIDE ANGLE LENSES

- A wide-angle lens has a focal length of 35 mm or shorter, which gives you a wide field of view. The wider your field of view, the more of the scene you'll be able to see in the frame. These lenses are ideal for many scenarios and most photographers have at least one trusty wide-angle lens in their kit.

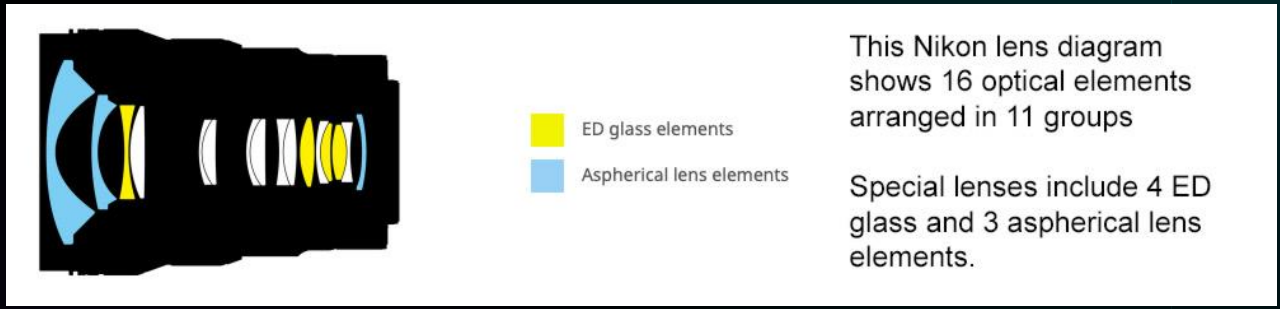
PRIME LENSES

- Prime lenses, because of their fixed focal length and wider maximum aperture, let in more light. This creates sharp images and footage with stunning shallow depth of field. Prime lenses also have fewer optical elements and moving parts, which means prime lenses provide faster focusing.

MEDIUM AND SUPER ZOOM LENSES

- A superzoom or ultrazoom lens is a type of photographic zoom lens with unconventionally large focal length factors, typically ranging from wide angle to extreme long lens focal lengths in one lens.

INSIDE A CAMERA LENS



- Special lens elements are often used to improve the final image, controlling various aspects which make up a photo. These are:
- Contrast – ideally we want a good degree of contrast in our images.
- Aberrations – there are various types of aberrations which should ideally be kept to a minimum.
- Vignetting – this is where the corners of an image are darker than the middle.
- Sharpness – this is the amount of sharp details across the frame, which we want to be high.
- Distortion – there are various types of distortion which make an image appear less realistic and should be kept to a minimum.
- Focus breathing – this mainly affects video recording, with focus breathing appearing as zooming when focusing during video capture. Ideally this should be kept to a minimum.

- The filter thread refers to the size and type of thread on the front of the lens where filters can be attached. It is important to know the filter thread size of your camera lens in order to choose the correct filters. The most common filter thread sizes for camera lenses are 52mm, 58mm, 67mm, 72mm, and 77mm.

FILTER THREADS

FOCUS RINGS

- Regardless of design, all lenses will have a focusing ring, which allows you to carry out manual focus (MF). Turning the focusing ring moves the focusing lens group inside the lens (either mechanically or electronically, depending on the lens design), which changes the focus.

LENS MOUNT

- It is a feature of camera systems where the body allows interchangeable lenses, most usually the rangefinder camera, single lens reflex type, single lens mirrorless type or any movie camera of 16 mm or higher gauge.

APERTURE RINGS

- The aperture ring is a collar on the camera that can be rotated to increase or decrease the aperture. The effect is letting more or less light in, respectively. The convenient part about aperture settings is that the amount of light taken into the camera at a particular setting will be equal across different lenses

- In photography, a lens hood or lens shade is a device used on the front end of a lens to block the Sun or other light source to prevent glare and lens flare. Lens hoods may also be used to protect the lens from scratches and the elements without having to put on a lens cover.

LENS HOODS

THE WIDE RANGE OF LENSES FROM CANON

EXAMPLE OF WIDE TO TELEPHOTO LENSES

WIDE ANGLE LENS

- Wide-angle lenses are a staple in most landscape photographers' kits, popular for their ability to capture sweeping vistas and starry nights. Apart from landscape photography, architecture and real estate, photographers frequently pick these lenses to make a space feel more expansive and impressive.

MACRO LENSES

- A macro lens is a dedicated camera lens that is optically optimized to handle extremely close focusing distances. It can take sharp, highly detailed images of microscopic subjects. It typically has a magnification ratio of 1:1 and a minimum focusing distance of around 12 inches (30 centimetres) or less.

PANCAKE LENSES

- Pancake lenses are less likely to draw attention than big lenses. This can be a perk when trying to shoot candid photos or street photography. As prime lenses, pancake lenses also tend to be bright, with an f/2.8 or f/1.8 aperture. Compared to the typical kit lens, pancake lenses can go a little farther in low light.

PRIME LENSES

- Prime lenses, because of their fixed focal length and wider maximum aperture, let more light in. This creates sharp images and footage with stunning shallow depth of field. Prime lenses also have fewer optical elements and moving parts, which means prime lenses provide faster focusing.

- The main advantage of superzoom lenses is that they can cover a wide range of focal lengths, and thus they are very versatile. Having different focal lengths for various subjects in a single camera and lens combo is a boon for travel photographers who want to travel light.

MEDIUM AND SUPER ZOOM LENSES

TELEPHOTO LENSES

- You can photograph just about anything with a telephoto lens, as long as it's far enough away from you to be within your lens's focal range. These lenses can work wonders for distant wildlife, photos of people, and cityscapes or mountainscapes.