All About Lenses

Terminology

Focal length - Defines the lens's angle of view

Prime - Lens with a fixed/unchanging focal length

Zoom - Lens with an adjustable focal length

Aperture - Describes how much light the lens gathers

Image Stabilisation - Some lenses include optical stabilization units to counteract the blurring effects of hand shake

Format - Describes the sensor size the lens is designed to work with.

Lens mount - Determines whether the lens will physically fit your camera

Source: dpreview.com

Focal Lengths

Lens type	35mm 'full-frame'	APS-C / DX	Four Thirds
Ultra wide angle	24mm and wider	16mm and wider	12mm and wider
Wide angle	28mm	18mm	14mm
Standard (Normal)	50mm	30mm	25mm
Telephoto	80mm and longer	55mm and longer	42mm and longer

Source: dpreview.com

Focal Lengths

Wide: 24mm and Wider

Captures the scope of large scenes because of their wide field of view.

Typical Applications: Landscape, architecture and interior. Also commonly found in ‘Action Cams’.

Objects close to the lens are proportionally much larger than objects further away. This can create a very comic or special effects.


28mm


24mm

Focal Lengths

Standard/Normal: 35-65 mm

These lenses have a similar field of view as the human eye.

Typical Applications: Street Photography, Photojournalism, environmental portraiture

Very popular focal length due to the availability of good cheap primes in this range.

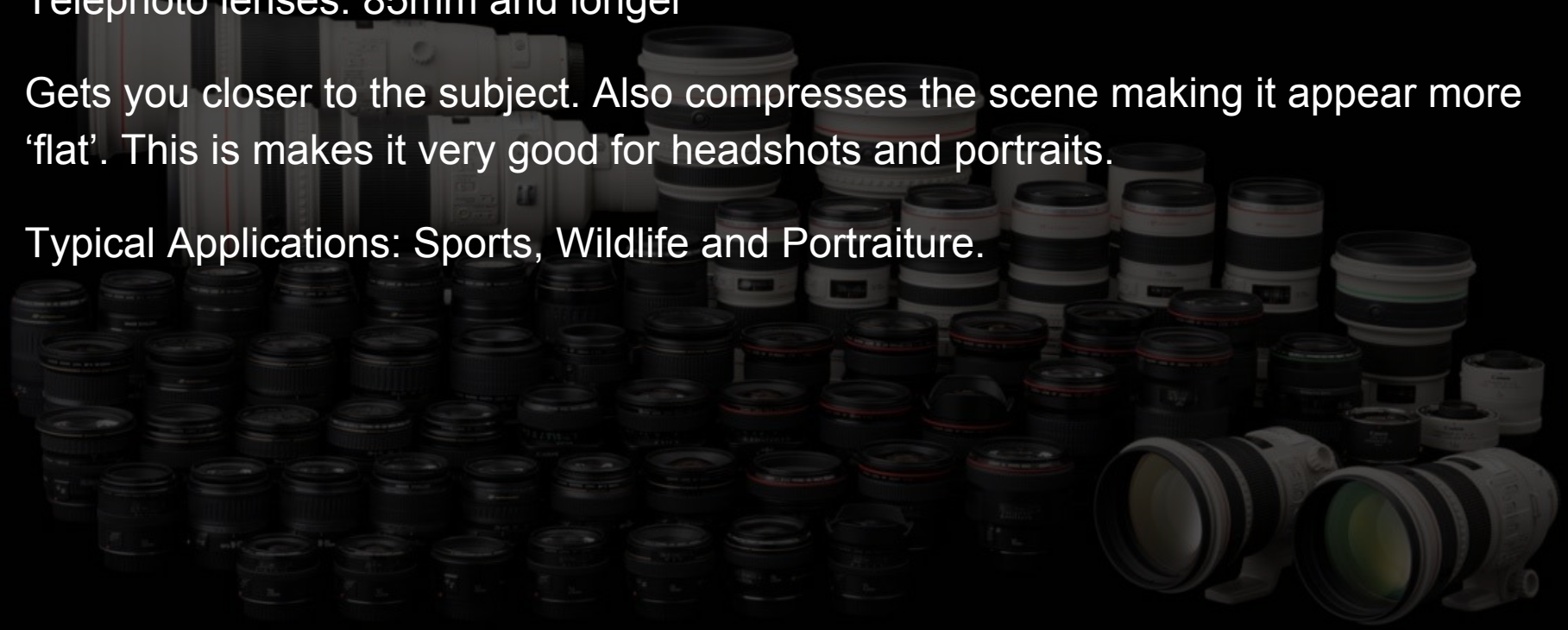

43mm

Focal Lengths

Telephoto lenses: 85mm and longer

Gets you closer to the subject. Also compresses the scene making it appear more ‘flat’. This is makes it very good for headshots and portraits.

Typical Applications: Sports, Wildlife and Portraiture.

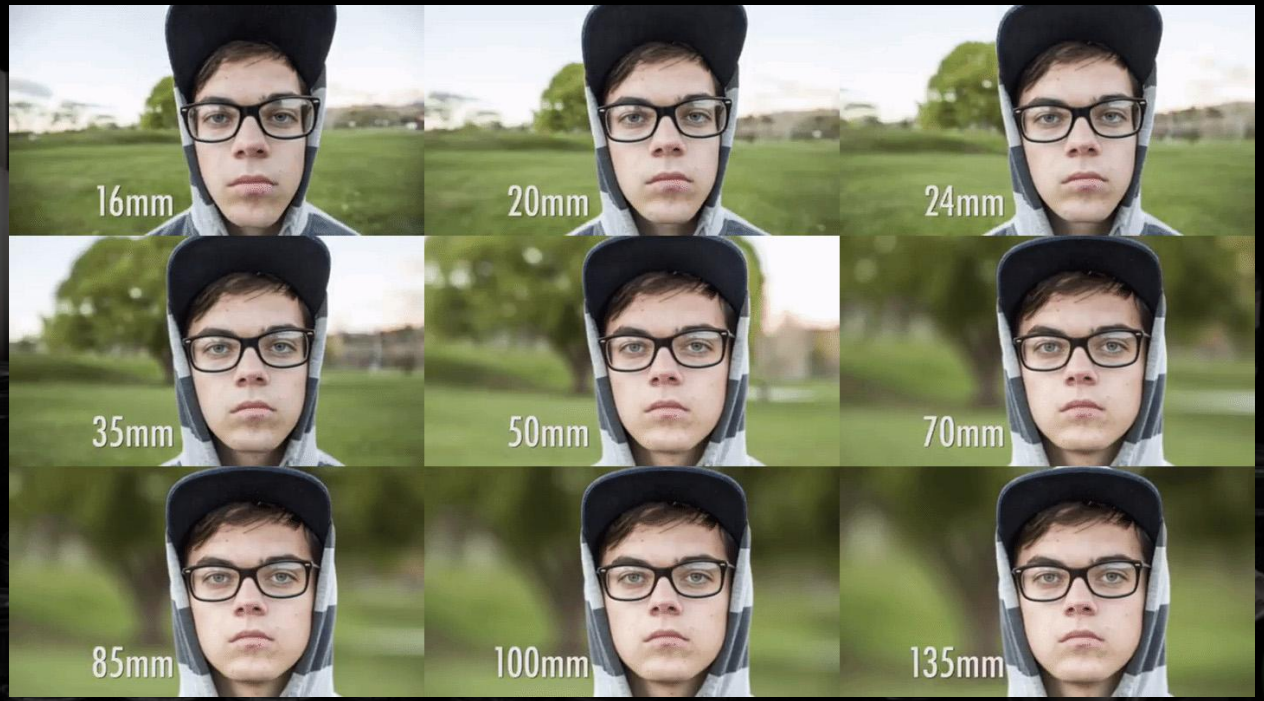


100mm

Field of View Comparison

Source: B&H Photo

Lens Compression



Source: Unknown from Reddit

Fish Eye

The widest lenses readily available giving up to 180° field of view.

These lenses are characterised by their heavy distortion.

Typical Applications: Creative landscapes and Interiors. Also used to make circular panoramas.

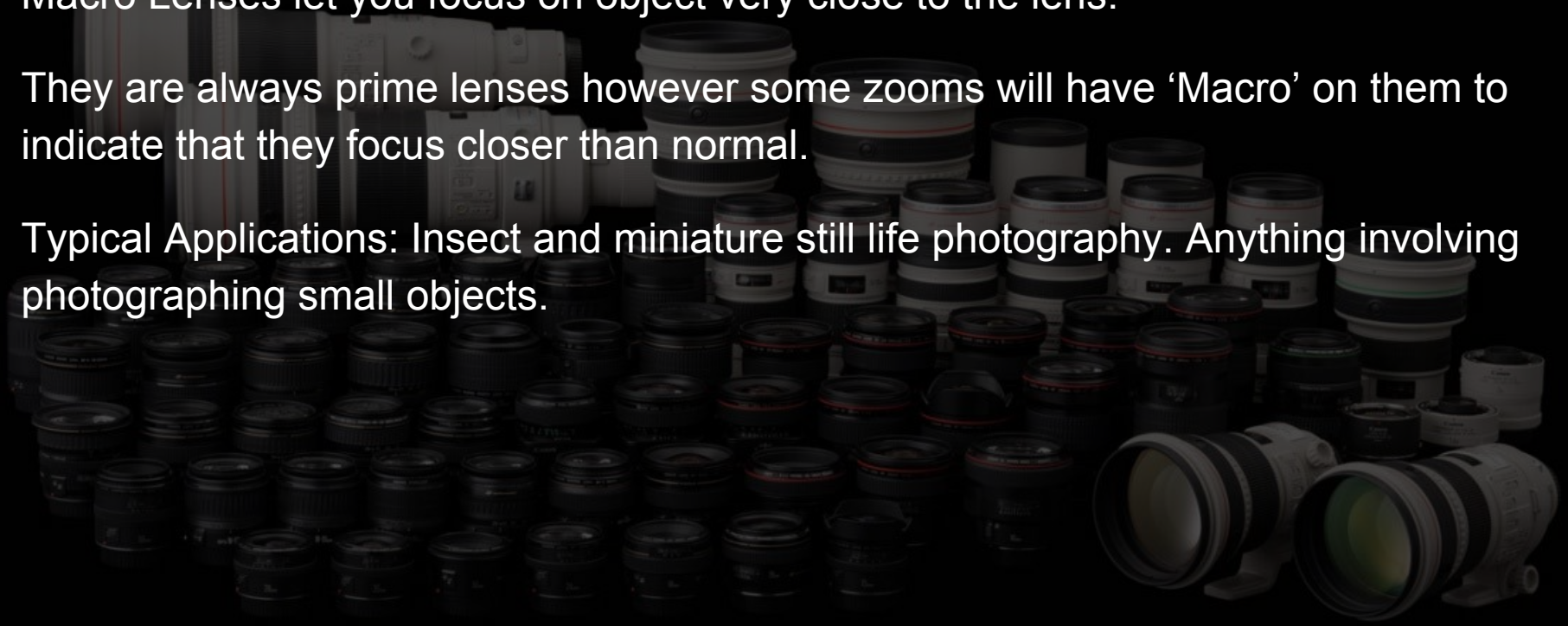
Image: NikonUSA.com

Macro Lens

Macro Lenses let you focus on object very close to the lens.

They are always prime lenses however some zooms will have ‘Macro’ on them to indicate that they focus closer than normal.

Typical Applications: Insect and miniature still life photography. Anything involving photographing small objects.



Aperture

Lenses will list their maximum apertures in their name, ie. 50mm f1.8.

Zoom lenses may have a variable aperture meaning the maximum aperture changes based on the focal length. For example an 18-55mm f3.5-5.6 lens will have a maximum aperture of f3.5 at 18mm and maximum of f5.6 at 55mm.

Fixed aperture lenses have the same aperture throughout the focal range.

The number of aperture blades will change the shape of the out-of-focus elements/bokeh. More blades = more circular bokeh balls.

Image Stabilisation/Vibration Reduction

These lenses have a glass element that compensates for camera shake. This can help you use slower shutter speeds while hand holding your camera.

Everyone calls it something different because it was invented when trademarks we in vogue.

Canon - Image Stabilization (IS)
Fujifilm, Panasonic and Samsung - Optical Image Stabilization (OIS)
Nikon - Vibration Reduction (VR)
Sony (NEX system) - Optical Steady Shot (OSS)
Sigma - Optical Stabilization (OS)
Tamron - Vibration Control (VC)

Source: dpreview.com

Format Coverage

Not all lenses will work on both full frame and crop sensor DSLRs from the same manufacturer. The labels for crop sensor only lenses are:

Canon - EF-S
Nikon - DX
Pentax - DA
Sony - DT
Sigma - DC
Tamron - Di II
Tokina - DX

Lens Mounts

The physical connector between the lens and the camera body.

There are adaptors available which will allow a camera to accept a lens with a different mount.

Third party lenses from companies like Tamron, Sigma or Lensbaby offer the same glass with a choice of different mounts. However normally a lenses mount can not be changed (well Kubrick did it but it cost him a lot of money).

Manual and Auto Focus

Manual focus lense have no Auto Focus motors (dir…)

Auto Focus comes in a few different flavours.

Micromotor: Cheap, noisy and locks the focus ring when active

Ultrasonic-type: Quiet and fast and allows the focus to be manually adjusted without turning off AF.

Stepping Motors: More popular in mirrorless systems. Quiet, fast and good for video.

What did I forget?

In other words, any questions or comments?

Send your questions to damo@damophoto.net