

Understanding focal length multipliers



Understanding focal length multipliers, often referred to as crop factor, seems confusing at first. It doesn't have to be. But it's important to get the gist of it before buying interchangeable lenses for a digital single lens reflex camera with a crop factor.



For example, a 50mm lens on DSLR with a focal length multiplier (FLM) effectively becomes mid-telephoto. Why? Sensors used in the majority of DSLRs have a smaller area than the surface of 35mm film. As a result, each camera's *effective* focal length will be different than the one listed on a lens.

Calculating effective focal length

To calculate the effective focal length of a lens, the focal length multiplier of the camera must be used. The three most common multipliers are 1.5, 1.6 and 2.0.

Canon's entry level camera's multiplier is usually 1.6. Nikon, Sony, and Pentax usually have a multiplier of 1.5. Olympus and Panasonic have a multiplier of 2.

A 50mm interchangeable lens on a DSLR with a 1.5 multiplier would have an effective focal length of 75mm. On a DSLR with a 1.6 multiplier the effective focal length is 80mm; it's 100mm on a camera with a multiplier of two.

Full frames DSLRs do not have multipliers or, more correctly, they have a multiplier of one. This is because their sensor format has the same area as 35mm film.

Wide angle shots and focal length multiplier

If you take a lot of wide angle shots, lenses like the popular 28mm wide angle lens will no longer give a wide angle of view. When attached to a DSLR with a crop factor, it becomes effectively equal to a normal lens. For wide angle shots, you'll need a super-wide angle lens (e.g. 12mm, 10mm).

Conversely, a long telephoto lens effectively has a longer telephoto length on a DSLR with a crop factor than when used on a full frame camera. A 250mm on DSLR with a 1.6 crop factor becomes 400mm. A nice plus for wildlife photographers.

Shutter speed, camera shake and FLM

To help prevent blurred images when holding a camera, shutter speeds generally need to be faster than the focal length. A lens on a digital camera set at a 35mm equivalent of 50mm requires a shutter speed of at least 1/60 second to help avoid blurry images.

However, this rule needs to be adjusted when using a DSLR with a crop factor. A 50mm lens on a camera with a 1.5 multiplier requires a shutter speed of at least 1/80.

Looking through the viewfinder

What you see through the viewfinder may be slightly smaller than the actual image saved onto the memory card. The actual percentage, usually more than 90 percent, is listed in the specifications found in camera manuals.